

STALKING
BIG - GAME
WITH
A - CAMERA
MARIUS - MAXWELL

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**STALKING BIG GAME
WITH A CAMERA**



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ADVANCED MATHS



IN THE LORIAN SWAMP

STALKING BIG GAME WITH A CAMERA IN EQUATORIAL AFRICA

WITH A MONOGRAPH ON THE AFRICAN ELEPHANT

BY
MARIUS MAXWELL

PREFACE BY
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DIRECTOR OF THE BRITISH MUSEUM (NAT. HIST.)

*ILLUSTRATED FROM PHOTOGRAPHS
BY THE AUTHOR*



THE CENTURY CO.
NEW YORK AND LONDON

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To
MY MOTHER

PREFACE

I HAVE had special pleasure in accepting Mr. Maxwell's suggestion that I should contribute a few words, by way of preface, to his illustrations of the big game of East Equatorial Africa. Good work may safely be left to speak for itself, and it must be obvious to anyone who examines this magnificent series of photographs that they require no commendation. To the lover of Nature Mr. Maxwell's enterprise will appeal as an expression of sport in its highest form. The author modestly hints at some of the difficulties and dangers which have attended his labours, but it is left to his readers to draw their own conclusions with regard to his perseverance, his determination and the perils to which he has exposed himself. Camera Sport of this kind is no easy occupation, but its devotee must be prepared to risk his life and to stalk his quarry in a spirit of adventure not inferior to that shown by the ordinary hunter of big game. The preservation of a faithful record of wild animals, whose numbers appear to be infallibly destined to decrease as the area of cultivation extends, is a nobler purpose than that of the sportsman whose success adds nothing to the advancement of knowledge.

Mr. Maxwell's primary object was to obtain photographs of Elephant, Rhinoceros, Hippopotamus, Buffalo and Giraffe.

PREFACE

The measure of his success can be appreciated by all who examine his results. He has not merely produced a series of pictures of exceptional beauty but he has performed the great service of showing his animals in their natural setting. The results are sometimes unexpected, as in a photograph which indicates that an Elephant at close quarters and in full view of the observer may be remarkably inconspicuous when standing motionless in its native forest. The wonderful series of Elephant and Hippopotamus will not fail to impress the reader, while the attitudes of Giraffes galloping, as the author informs us, at a rate of thirty miles an hour, are most instructive as illustrating the mechanism of this extraordinary animal.

Mr. Maxwell has triumphantly accomplished the object he set before himself, and in the future, when perhaps the animals of which he gives faithful portraits will have become extinct, or restricted to a few game reservations, the value of his services will be even more appreciated than it deserves to be at the present time.

SIDNEY F. HARMER

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INTRODUCTION AND ACKNOWLEDGMENTS

SO much has been written on big game hunting by men who are better qualified to describe their wonderful adventures on shooting expeditions in the African wilds, that it is not my intention to offer any suggestions as to the best ways of finding and tracking animals and making them the spoil of an eager rifle. Rather has it been my desire to secure photographic records of incidents in big game hunting, incidents such as are found in the writings of well-known hunters, and to illustrate these experiences by actual photographs wherever and whenever fortune has turned my way, and given me opportunities to obtain an accurate shot with the camera instead of the rifle.

It has been primarily my object to obtain photographic records of the greater game animals of Africa, in their own secluded haunts, and to secure "portraits" of the beasts at the moment of their first close acquaintance with the huntsman. The subjects of my pictures include some of the most interesting representatives of the animal kingdom, which are unfortunately likely to become extinct much sooner than the smaller mammals, owing, among many other reasons, to their peculiar habits, which demand seclusion and a life undisturbed by man and civilisation.

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The spreading of civilisation far into the interior of the once Dark Continent of Africa has progressed so much of late years that the ever-increasing occupation of large tracts of veld by enterprising settlers threatens to imperil the very existence of the larger mammals of East Equatorial Africa. It is likely that the elephant, the lordly master of the bush-covered tracts of Kenya Colony, will be one of the first of the African pachyderms to vanish from this world. I venture, therefore, to suggest that it now becomes to some extent advisable for the present day sportsman in search of adventure to preserve all possible records of the life of these beasts in their natural surroundings. What better instrument could be employed for compiling such a collection of records than the camera, equipped with a careful selection of the best modern lenses?

Much has already been achieved by the author of "With Flashlight and Rifle," the well-known animal photographer, C. G. Schillings, and much valuable knowledge has been contributed by A. Radclyffe Dugmore in his excellent "Camera Adventures in the African Wilds." Both these authors have made us acquainted with some of the troubles attending the sport of photographing the greater game animals in their native state, and also with the pleasures that may be derived from such a pastime.*

Schillings, in particular, in his most interesting book, "In Wildest Africa," expresses a great desire to obtain satisfactory portraits of the African elephant in bush-country. He relates the difficulties he encountered, and the repeated failures

* While I was reading the proof-sheets of this volume my attention was drawn to a series of photographs of African Big Game, taken by Mr. F. Russell Roberts, which are among the finest I have seen reproduced. They appeared in "Wild Life" in 1914.

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experienced owing to absence of good light conditions; he was overjoyed at having ultimately succeeded, with his telephoto lens, in securing a picture of a pair of African elephants in scrub country. The subjects on the plate were unfortunately devoid of detail, and showed clearly that the use of a telephoto camera in such conditions of lighting as prevail at dawn in the bush could hardly ever give satisfactory results. In such circumstances the only satisfactory procedure is to stalk the animals with a hand-camera, fitted with a very fast lens, and to take the snapshots at close range.

Some of the difficulties enumerated by Schillings are only to be appreciated when, after many fruitless attempts, the camera hunter is at last rewarded with a very indifferent picture of the much coveted subject. It is just these difficulties, however, and his repeated failures that appeal to the keen sportsman and spur him to further efforts.

The chief aim of the camera hunter must, of course, be to obtain a result that will be of value alike to the naturalist, to the sculptor, and to the painter. The naturalist requires a clear picture of an animal with sufficient detail to enable him to distinguish the particular sub-species, variety, or race, and to recognise or ascertain, as far as possible, the characteristic features and external anatomy of the subject. He may also wish to know with accuracy in what kind of country the animal occurs, and the nature of its favourite surroundings; a judiciously chosen series of photographs will supply illustrations of its habits, which may, with careful study, lead not only to increased knowledge of animal life in general, but also, incidentally, to a clearer conception of the habits and environments of extinct faunas. A portrait of an animal, in

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its natural surroundings, that will render faithfully every fold of the skin and perhaps an outline of the muscles in a particular attitude is extremely rare, and is hardly obtainable with a telephoto lens and indifferent light. Close work is clearly necessary in the attempt to gain results of such quality.

The present contribution towards the knowledge of the greater game animals of East Equatorial Africa consists of photographic records taken by the writer during several travels in this part of Africa.

The originals have been enlarged from quarter-plate or a size five by four inches in order to bring out the detail on an increased scale, and, to some extent, to counteract the inevitable loss of detail in the reproduction.

Unless it is specially stated that the exposure was made with a telephoto lens, the photographs have been taken with ordinary lenses of six to ten inch focus.* Where it seemed that they might be of interest I have in some cases added my approximations of the distance.

The demands of the naturalist are what I have attempted to satisfy, in the hope that what may prove adequate to his purposes may satisfy the less exacting needs of the artist, in which term I include the skilled taxidermist. It is my hope that these records may be of use to those who devote their time to the study of animal life, and especially to the staffs of the various museums and institutions whose aim it is to preserve faithful records of all phases of wild nature.

My thanks are due to those Government Officials in Kenya Colony who have kindly assisted me in furnishing passes

* Some with a Zeiss Tessar lens of 13.5 centimetre focus and an occasional one with a stereoscopic camera and lenses of two inch focus.

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for my passage through the various Native Reserves and for the Northern Frontier District, the latter being under military administration.

I am greatly indebted to Sir Sidney Harmer, K.B.E., Sc.D., V.P.R.S., Director of the Natural History Museum, for having kindly written the preface to this work.

Acknowledgments are due to the publishers and authors of the various works from which quotations are made in my text.

My thanks are also greatly due to Captain J. G. Dollman, Assistant Keeper of Zoology, British Museum, for his various corrections and valuable suggestions, and to the late Dr. C. W. Andrews, F.R.S., of the Department of Geology, who kindly read Part II of Appendix A, and made some remarks which have been very valuable to me. His recent death was a great loss to science.

Last, but not least, I desire to record my appreciation of the kind assistance rendered by James Hugh Barnes, my staunch companion on several safaris, whose intimate knowledge of the country and the native languages has saved me many a weary day of travel to obtain my object and who stood by me in an occasional tight corner.

From the nature of many of the photographs which appear in this book, it will become evident to the reader that no camera shelters, perches, or any of such artificial means have been adopted, nor has flashlight been employed. I have endeavoured to depict the animals as the hunter comes upon them in their native wilds, and have treated the photography of the greater game animals of East Equatorial Africa as a sport, and not with a commercial object in view.

I may perhaps add that none of these photographs were

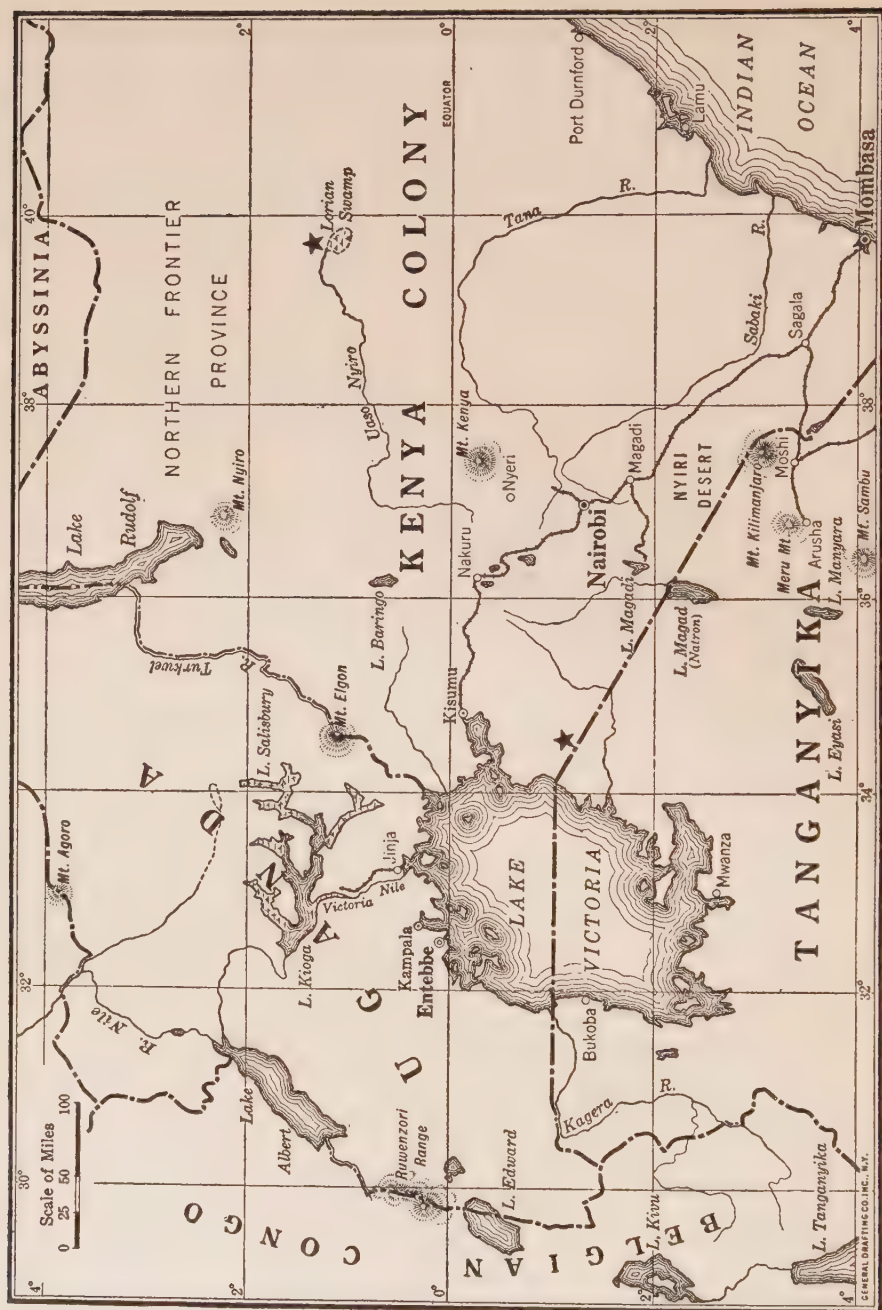
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taken in any of the areas proclaimed as Game Reservations within Kenya Colony.

That this work may afford the interested reader a few hours of pleasure, and that my shortcomings may be leniently judged, is all that I can wish for.

M. MAXWELL.

STALKING BIG GAME
WITH A CAMERA



STALKING BIG GAME WITH A CAMERA

CHAPTER I

A CAMERA HUNTSMAN'S EQUIPMENT

I HAVE from time to time been requested to offer suggestions as to what equipment would be most desirable for a photographic trip to East Africa. Everyone has naturally his own choice and ideas in the matter of cameras, and I can only describe, as an amateur, the outfit that suited my purpose best, and give the reasons for my preference for a certain type of camera and the requisite lenses.

In undertaking the more awkward work of stalking the African elephant in its secluded haunts, the question naturally arises—why not make use of the advantages of a telephoto camera?

A telephoto lens would indeed facilitate the work greatly but a moment's consideration will bring the conviction that a telephoto lens of even moderate power will prove unsatisfactory, if not entirely useless, when it is intended to be used for animals whose habits are partly nocturnal, which remain in the dense bush during the day and are only to be found in the

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open at break of day or late in the evening when the light conditions are such that even the most rapid of modern lenses will not always give sufficient exposure of the film or plate.

After innumerable failures and disappointments with extra rapid films, I arrived at the conclusion that for this kind of work where the use of a hand-camera is imperative, to photograph moving objects in poor light lenses with the largest possible apertures are necessary, namely, those which work at $F/4.5$ or an even larger aperture. The duration of the exposure has to be limited to a maximum of one twenty-fifth part of a second, as with longer exposures it is difficult for the operator to keep the camera steady, taking into consideration the possibility that the exposures are to be made under conditions of excitement, at close quarters with game that may prove truculent, and which at times is directly facing the operator.

Take for instance a telephoto hand-camera with a lens consisting of a positive element of $F/4$ aperture and say ten inch focus, and a negative element to produce two and a half magnifications, which may be accepted as one of the fastest lenses on the market at the present day. The equivalent focal length of the combination is here twenty-five inches and the resulting aperture $F/10$ correspondingly, even without altering the stop of the diaphragm. Comparing the relative exposures, that of the single lens alone, with $F/4$ as aperture, and that of the combination adjusted for two and a half magnifications, with correspondingly $F/10$ as aperture, we find that even this telephoto combination of extremely low power requires approximately six times the exposure of the single lens, and this would assuredly prove to be out of the question



THE EAST AFRICAN ELEPHANT

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for moving objects in unfavorable light. Otherwise the range at which satisfactory game pictures can be taken with this type of moderate-power telephoto lens—roughly fifty yards—is sufficient to enable the operator to prepare himself in case the animal resents the intrusion.

Other disadvantages attend the use of a telephoto camera for work that is generally carried out under conditions of inevitable excitement and haste on the part of the photographer, to say nothing of his having to avoid a probable multitude of obstructions with a limited space for manœuvring. The telephoto hand-camera, even quarter-plate size, is rather bulky for bush work, and the projecting lens is very cumbersome, making it difficult for the operator to hold the camera steady. Sharp, accurate focussing is, moreover, imperative. This takes time, and it would hardly be reasonable to expect the animal to pose for the necessary period, and particularly so in a face to face encounter, such as, for instance, with the subject depicted in the first illustration in Chapter III. This particular exposure demanded the use of a short focus lens to suit the environment and of a large aperture for instantaneous work to meet the indifferent lighting conditions prevailing at the time.

These points were, as I gather, largely responsible for C. G. Schillings's lack of success in endeavouring to photograph the African elephant in bush country with a telephoto camera.

I am in entire agreement with Schillings that to find these elusive denizens of the African wilds in a suitable bush locality, with reasonable conditions of lighting, requires some effort and is also largely a matter of luck.

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Telephotographs frequently show little depth of focus or definition and will not stand enlarging. The flatness of the picture increases with the intensity of the magnification; the results are likely to show not only less detail but also a pronounced vagueness in the surroundings of the subject. Some prefer this and desire the main object to stand out more prominently, leaving the environment somewhat out of focus. This is a matter of taste, but to most interested persons the details of the surroundings, as well as those of the animal itself, are of some value.

Photographing wild life can at all times only be achieved with success when a multitude of conditions are satisfied, and it is not often that such conditions are offered at the critical second when the operator thinks it is the moment to press the release of his camera-shutter. It is a common experience, and at times almost to the point of being uncanny, that some slight accident puts an obstacle in the way and prevents the operator from obtaining the desired result. A branch, a small twig, a few blades of grass, a small bush, conspicuously out of focus, are the trifles most frequently met with: they are sufficiently disastrous to spoil one's efforts.

On one occasion, after a good deal of exciting manœuvring, I happened to succeed in snapping a fine bull elephant at close quarters, but on development it was found that the film presented the creature with a tiny thorn twig circled round in front of one of its eyes, which made it look as though it was wearing a monocle. This was one of the more humorous mishaps. At other times the effect of chance obstacles becomes most aggravating.

As the result of experience I have found that, all things

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considered, the best type of camera for obtaining clear photographs in bush conditions is the reflex, equipped with a rapid lens of six or ten inches focal length, working at $F/3.5$ or $F/4.5$ aperture. It was upon a camera of this description that I relied for the most part. It was made of well-seasoned teak-wood and brass-bound for rough tropical wear. The apparatus was fitted with an efficient self-capping focal plane shutter giving speed adjustments for one to one thousandth of a second, suitable for slow bush work as well as for conditions demanding a high speed, as in the case of fast-travelling game on the veld.

This camera outfit may perhaps be supplemented by a spare lens consisting of one of the modern fixed focus telephoto lenses, which are in reality mere long focus lenses that have the advantage of requiring a camera extension of half their equivalent focal length or thereabouts, such as, for instance, the Ross telecentric with seventeen inch focus and aperture $F/5.4$, the Cooke telephoto anastigmat $12\frac{1}{2}$ inch focus and $F/5.8$, or the Dallon lens, similar to the Ross telecentric. All three of these have the position of the so-called nodal plane a certain distance outside the camera and lens, and this accounts for the comparatively short extension required from the bellows.

Occasionally, for photographing the smaller game animals inhabiting the open plains of East Africa, such as the zebra and a number of species of antelope, I have made use of a telephoto camera with great advantage. With bright light, exposures of one seventy-fifth to one hundredth of a second can be used in telephoto work of moderate power with from three to four magnifications. The instrument which I employed

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is an ordinary quarter-plate reflex camera with focal plane shutter operating with speeds ranging from one-fifteenth to one-thousandth of a second for instantaneous work, and is besides fitted with "time" and "bulb" exposure. The camera, which has not only to withstand the climate in tropical countries but also a fair amount of rough handling, is accordingly built of well-seasoned teakwood with the joints free from glue, being either dovetailed or screwed. The front is fitted with a sliding box panel to carry the telephoto lens. The apparatus is neat and handy as far as telephoto cameras can be, and may be used with either plates or film packs. The woodwork can be covered with leather to render it less conspicuous, and the fittings lacquered or painted in such a way as to blend with the colours of the particular environment for which it is to be used.

To reduce the weight as much as possible a camera has been chosen for a maximum extension of eight inches, and this is quite sufficient for the lens under consideration.

The lens may be either a Dallmeyer Grandac or any other modern, low-power telephoto combination. The one fitted to this particular camera consists of a combination of a well corrected portrait lens with a focal length of 10 inches and an aperture as large as $F/4$, and a negative element with four inch focal length. The whole is mounted in aluminium for the sake of lightness, but in damp tropical countries the metal is in time liable to become corroded at the settings.

This combination covers a quarter-plate with six inch extension of the bellows, giving 25 inches focal length and aperture $F/10$, and would mean that compared with an ordinary ten inch lens the operator can be two and a half times as

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far away from his subject to obtain an image of the same size.

On a bright day, on the plains of East Africa, this combination permits of successful exposures being made of one seventy-fifth to one hundredth of a second, and sometimes even less. It is useful to bear in mind that on the veld in East Africa a telephoto exposure is rarely attended with success after ten o'clock in the morning, owing to the intense heat haze, which causes the subjects to become abnormally blurred. It may be noted that Radclyffe Dugmore produced some remarkable telephotographs of game animals on the plains of East Africa, which appear in his "Camera Adventures in the African Wilds."

For very close work in the bush under awkward conditions a handy metal stereoscopic camera fitted with the fastest of modern lenses may prove to be the most suitable type of apparatus.

The ultra-rapid Kinematograph lenses with apertures below $F/2$ promise to be excellent lenses for this kind of work, being, with the same light conditions, approximately five times as fast as those with $F/4.5$ aperture.

A pair of these lenses fitted to a stereoscopic reflex camera might prove of the greatest use to the sportsman bent on taking snapshots of game in secluded corners of the thick bush. A drawback with these large aperture lenses is, however, that they may not be sufficiently perfect to obtain sharpness in definition when used with their full aperture.

As for the requisite development equipment for a photographic journey into the interior of Africa, the ideal arrangement would be, of course, to have a complete outfit at one's disposal. The developing en route will give one many a

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useful hint, particularly with regard to correcting exposures. Such an equipment might be carried in mule trunks at a reasonable cost, but when a trek through a tsetse-fly infested country is in prospect the accessories will have to be carried by porters, which then adds considerably to the expense of the safari, since each additional porter has to be provided with his daily "posho" (ration of ground mealies).

In such circumstances it becomes more or less a matter of necessity to make arrangements for preserving the exposed films or plates by packing them into air-tight storage tins as soon as possible after exposure, preferably on dry days, and the tins can be securely and conveniently sealed with adhesive tape.

A word may be expected on the subject of rifles, although for detailed discussion I refer the reader to the standard books on sporting trips. The bore of the rifle depends so much on the purpose for which it is to be employed. I may say that even when in pursuit of photographs of the African elephant I have rarely been called upon to use my rifle. A rifle is often too cumbersome to carry in addition to a camera, and hampers the stalking operations considerably.

The rifle is intended for extreme cases only, when a heavy bore is clearly indicated to stop or turn an animal at close quarters; on such occasions there is hardly sufficient time to take anything like a careful aim. A 0.470 and a 0.600 bore, double-barrelled, high velocity rifle with the usual cartridges containing a charge of 75 and 100 grains of cordite respectively have both suited my purpose admirably. The barrels may be conveniently as short as 22 inches for bush work: an ejecting mechanism is not needed, as there will, on the rare occasions



HERD OF WILDEBEEST ON THE UPLAND PLAINS OF KENYA COLONY (TELEPHOTOGRAPH)

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when the gun is required, hardly be enough time for reloading.

The method which I have found most successful for obtaining close photographs of the larger African animals, such as elephants, rhinoceroses, and buffalos, has been evolved only after many unsuccessful trials. I have found that, while the sudden appearance of the photographer is ordinarily sufficient to scare even the most reputedly dangerous of the large game animals, yet at the same time it occasionally happens that they will not immediately resort to flight. In some cases the animal hesitates before retiring long enough for the stalker to secure a picture; in other cases it may approach in an irresolute manner only to retreat disconcerted by the strange appearance of the motionless photographer; in still other cases it may resent and attack the intruder. My practice has been to rely as much as possible on the avoidance of all quick and sudden movements, and, whenever possible, to stand quite still. It is remarkable how successful this procedure has proved. It need hardly be emphasized that no precise rules of conduct can be laid down. I have always had to adapt my action to circumstances, and I must refer the reader to the descriptions of my various encounters for a fuller account of the methods by which the pictures were obtained.

The key to whatever success was achieved in the photographs reproduced in this volume lies in my having realized that telephoto work was incapable of giving me the quality and standard of the results which I desired.

CHAPTER II

FIRST VISIT TO BRITISH EAST AFRICA

MEMORY carries me back to the year 1907,* when every African traveller was delighted by the fascinating work of the German photographer, C. G. Schillings. In his interesting books, "With Flashlight and Rifle" and "In Wildest Africa," we see the many kinds of game belonging to the plains of East Africa faithfully portrayed in their natural surroundings.

These photographic records were considerably added to by our fellow countryman, Radclyffe Dugmore, the enterprising artist and game photographer, in his admirable "Camera Adventures in the African Wilds," besides other photographs of equal merit which have unfortunately not appeared in book form.

These fascinating accounts, partly illustrated by reproductions of excellent photographs that the authors had laboriously collected during many expeditions, are more than enough to inspire every lover of wild life with a keen desire to visit the regions described. Few pleasures can equal the delight afforded by the spectacle of large herds of game animals graz-

* The German edition of "With Flashlight and Rifle" appeared in 1905.

FIRST VISIT TO BRITISH EAST AFRICA

ing peacefully on the wide upland plains of tropical East Africa.

I determined therefore to avail myself of the first possible chance to visit British East Africa* and gain first-hand information of the game at close quarters, but not until the year 1911 did this longed-for opportunity present itself, and my first acquaintance with the country began with a short safari from Nakuru to Lake Baringo.

It is astounding to the newcomer to find such an abundance of the commoner antelopes and zebra. The herds are scattered all over the gentle slopes of the vast, turf-covered plains, and offer a marvellous sight, especially towards the evening hours just before sundown, when files of antelope and zebra wend their way towards the distant drinking pools.

Away in the distance can be spied a small herd of giraffe, moving in stately fashion across a stretch of parched veld to reach the fringe of some thorn scrub, gently swaying their long necks with every dignified stride.

Their fantastic height, with their graceful heads some seventeen to eighteen feet from the ground, towers above the surrounding thorny bush, so that the upper part of their slender bodies is quaintly silhouetted against the sky.

They may be seen stalking through the low bush and entering the park-like country beyond, every now and then reaching for a young shoot, browsing upon the immature leguminous leaves of the acacia trees, and scanning the horizon at intervals. It is a strange sight, which lends a touch of magic to the effect of the soft evening light upon the veld, as they reappear into the open and are sharply set off against the skyline. These

* Kenya Colony.

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extraordinary ruminants are, indeed, an ornament to the locality they inhabit. Stalking with dignified pace they travel obliquely across the plain, slowly fading away in the distance. Such a sight, once witnessed, lingers in the mind of the fascinated observer. The charm of the African veld casts a curious spell over a wanderer, rarely ever to release its grip, and creates in him a longing to return to its mystic beauty.

Twilight is rapidly fading, the light is dim, and the restful day is ended for the grazing herds of antelopes. The distant roar of a lion announces the beginning of his nightly prowling, and also the beginning of the vigil of the watchful herds of zebra and wildebeest, which are now assembled in the middle of a plain and are grouped together with their sentries posted well away from the bush so as to avoid the ambush of the prowling carnivora. The soft bark of the zebra * and the intermittent low grunts of the wildebeest (brindled gnu) are heard throughout the night at varying intervals.

In the year 1911 the plains, sloping down towards the small Lake Solai, which is little more than a marsh during the dry months, were nightly traversed by numerous lions; their roaring was frequently heard, sometimes even before sundown. The volume of sound emitted from the deep throat cavities of these splendid beasts gradually increases until it develops into roar after roar of vibrating sounds echoing through the valley and subsiding finally into a succession of grating grunts.

The effect of a lion's roar from a distance is surprisingly impressive. At night, when several are roaring in concert in

* This refers to the peculiar cry of the *Grant* zebra which is quite different from that of the *Grévy* zebra of the northern regions of the colony mentioned in Chapter X.

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close proximity to the listener, the volume of sound appears tremendous. Those who have heard them at night at close quarters can well imagine what effect the reverberating sounds must have on the harmless and defenceless inhabitants of the plains. The sound that is impressive to mankind must be awe-inspiring to the game herds and causes them at times to scatter in frantic confusion.

Looking back on those days of my first journeyings, it was with regret I found, during my later travels through the Sotik country towards the great Lake Victoria Nyanza, that the full voice of the lion was hardly ever heard, and that the beasts' presence was only announced by their low, grating grunts at long intervals in the night when they were roaming over the Masai plains in search of their prey.

The precise reason of this is difficult to explain. I am inclined to believe that the inevitable spread of civilisation and the mere presence of the white man detected by his scent has been sufficient to make them diffident in announcing their whereabouts. It is gratifying to find that the restrictions imposed by the game authorities at Nairobi have proved most successful in preserving the finest representative of the African carnivora. The shooting of lions in Kenya Colony has now been limited to four heads per licence,* which should be enough to satisfy the average sportsman who is out for a set of trophies representative of the greater game animals of East Africa. These very necessary restrictions imposed by the Game Department have put an effective stop to the wanton, and often senseless, slaughter of these magnificent beasts.

Following a wounded lion in thick cover is admittedly

* In 1921.

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still a dangerous pastime, and appeals strongly to the more experienced and ardent of the sportsmen of to-day, but the killing of a lion from a boma * with a powerful modern rifle involves very little risk, and a number of lions can often be destroyed in this way. To watch and observe the great beasts from a position of security as they are feasting on a kill is another and less destructive sport, and a wealth of first hand information on their habits can be gained without destroying the object of one's study. The behaviour of a gluttonous assembly of lions at night growling and tearing round a bait is most exciting and instructive.

In the region between the Amala River and the sources of the Mogor (Gori) River, in the Masai Province, I have on several occasions watched these magnificent creatures throughout the night, and seen as many as nine lions of both sexes come up to the bait and gorge upon the carcasses of a pair of zebras, chained to a stake in the ground. The short flashes of an electric torch or the thud of a well-directed stone thrown at the feeding community will usually scatter them for a time, occasionally to the accompaniment of growls of resentment. But where lions are plentiful and when they are ravenous, and especially on dark, stormy nights, they may again and again return to their prey, and remain indifferent to an occasional flash of the torch and even to the report of a rifle. It is curious to see, when there are several lions round the kill, how the males usually begin their feed on the brisket and chest of the carcase, whereas the lionesses appear to content themselves with the paunch and the hind quarters.

Major A. Radclyffe Dugmore, the author of "Camera

* A circular hedge, or enclosure, of brushwood.

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Adventures in the African Wilds," who specialised in taking flashlight pictures of these beasts of prey, gives in his book some interesting photographs of a single lion moving up to its kill. His exposures were attended with more success technically than those of Schillings, the earlier pioneer in animal flashlight photography, in the days when the lenses had not attained the perfection of the more modern combinations. Such pictures are not only interesting from the sportsman's point of view, but are undoubtedly of value as a contribution to our knowledge of the lion and its habits in its proper environment. Flashlight photography and the use of a boma are clearly the only satisfactory means of securing successful records of these purely nocturnal creatures.

The lion in East Africa is without doubt a scavenger, and has been known to prey on the carcase of an elephant some three days killed, even in localities where game is plentiful. This is also true of the lesser member of this family, the African leopard. From what I have seen of these carnivora I am inclined to conclude that the lion prefers to shirk the effort involved in securing his own kill, and in many instances, even where game is abundant, he appears to be content with a dead bait rather than go to the trouble of hunting for his prey.

In several districts of Kenya Colony the lions are still abundant, but the curious fact remains that, in the majority of the localities where they abound, the old-time roar is now seldom heard. They may occasionally be seen in broad daylight, and sometimes in the early hours of the morning when they are returning from their nightly prowls and move across a stretch of grassy plain between two adjacent patches of

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bush. In such circumstances even the boldest among them will show a great aversion from encountering a human being.

Man-eating lions are rare in the territories of Kenya Colony, and when a lion is occasionally met with in broad daylight, at close quarters, he will usually make himself scarce in an unobtrusive fashion, sometimes bristling up his mane and baring his teeth, but nevertheless with the main intention of moving out of the way of the intruder. He rarely loses sight of the latter until he finds himself behind the cover of a clump of bush; the observer is then likely to see the animal bounding away for all he is worth. In the case of a wounded lion it is an entirely different matter.

I have come across quite a number of them in the course of my stalking experiences, but in broad daylight I have never seen them stand up and face the camera for more than a second or two, which leaves the unprepared operator hardly time to get ready for an exposure. At night lions appear to be bolder.

In the vicinity of our camp, which was situated at the foot of a low escarpment and on the sloping plains round Lake Solai, we met with numerous spoor of elephant. From the accounts the natives gave us there may have been a herd of from thirty to forty of these elusive giants which had visited the lake some days previous to our arrival and spent some time in the adjacent park-like country and among the reeds of the marshy lake banks. Taking up the spoor we followed it for several days in the hope of catching up with the herd, travelling light and camping on their tracks. The tracker whom we engaged finally gathered from the spoor that the herd had settled to what the Boer calls "de lange stap," meaning "the long

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stride," which invariably indicates a migration of the particular herd into a different locality, often situated some fifty to a hundred miles away from their starting point. From the direction of the spoor the herd was evidently making its way towards the Aberdare Range; it had, presumably, originally migrated from the Mau forests.

It was on this particular occasion that I made up my mind to return to the country at some future date equipped with the necessary camera outfit, and endeavour to secure a series of photographs illustrating the life and habits of the African elephant in his native haunts; thereby, incidentally, filling up a gap in the photographic records of the larger game animals of East Equatorial Africa. My ambitions in this direction were somewhat stimulated by the following passage from Schillings's "In Wildest Africa," * in which he enumerates the various difficulties he met with, and recounts, in vivid style, the repeated failures in his persevering attempts to obtain portraits of this giant among the dwellers in the African wilds.

"At last I received good news. A huge bull-elephant had been seen for a few minutes in the early morning hours in the vicinity of the Kilepo Hill. This overjoyed me, for I was quite certain that, in a few days now, I should meet them above on the hill. I left my camp to the care of the greater part of my caravan, but sent a good many of my men back into the inhabited districts of the northern Kilimanjaro to get fresh provisions from Useri. I myself went about a day's journey up Kilepo Hill to get a picture *coûte que coûte*."

Again we read (page 530):—

"So every morning, either I or one of my scouts was

* Hutchinson & Co. See page 528.

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posted on one of the hills—Kilepo especially—to keep a sharp look-out. It needed three hours in the dark and two in daylight to get up the hill. It was not a pleasant climb. We were always drenched to the skin by the wet grass and bushes, and it was impossible to light a fire to dry ourselves, for the animals would certainly have scented it. We had to stay there in our wet clothes, hour after hour, watching most carefully and making the utmost of the rare moments when the mist rolled away in the valley and enabled us to peer into the thickets. It may seem surprising that we should have found so much difficulty in sighting the elephants, but one must remember that they emerge from their mud-baths with a coating that harmonises perfectly with the tree trunks and the general environment, and are therefore hard to descry. Besides, the conditions of light in the tropics are very different from our own in our northern climates, and are very deceptive. When fortune was kind I could just catch a glimpse during a brief spell of sunshine of a gigantic elephant's form in the deep valley beneath. But only for a few instants."

On page 512 we find another passage, which reads thus:—

"For the latter (the African elephant) have become, especially the full-grown and experienced specimens, the shyest of creatures, and therefore the most difficult to study. Should anyone differ from me as to this, I would beg him to substantiate his opinion by the help of photographs, taken in the wilderness, of elephants which have not been shot at"—he means, presumably, unwounded animals—"photographs depicting for us the African elephant in its native wilds. When he does, I shall 'give him best.'"

One cannot but admire the strenuous efforts Schillings

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made to overcome the numerous obstacles in his way, and regret the bad luck that frustrated his energetic attempts to secure a series of photographic records of the African elephant.

On glancing through the interesting pages of the classic accounts of our well-known hunters, such as A. H. Neumann's "Elephant Hunting in East Equatorial Africa" and F. C. Selous's "A Hunter's Wanderings," one rather regrets the absence of illustrations from nature. Photographic records of their wonderful experiences in the days when elephants were much more numerous would have been of the greatest interest to the sportsman of to-day and to those students of natural history who may not be in a position to study these great survivors of a prehistoric fauna among their secluded surroundings.

With the assistance of modern photographic lenses such illustrations are now brought within comparatively easy reach, and it is, with a certain element of luck, possible to portray many of the most interesting and instructive incidents in the lives of game animals.

These brief notes of my preliminary journeys bring me to my first serious attempt at big game photography. It was with the special idea of photographing the African elephant in its native environment exactly as the hunter would see it, that is to say, without the use of artificial screens or perches, that I visited East Africa again in 1921. Landing at Mombasa on the 1st of May, I proceeded *via* Nairobi through the Masai Province, south of the Uganda Railway, to the region between the Amala (Mara) and Mogor (Gori) Rivers, where elephants were reported to be fairly numerous at certain seasons. My equipment included the camera already described

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fitted with a Ross "Xpres" lens with an aperture of F/4.5 and 6 inch focal length, which proved quite a simple and the most useful apparatus for the bush work undertaken.

* * * * *

The railway journey from Mombasa to Nairobi, the administrative centre of Kenya Colony, is a revelation to newly arrived travellers, and it may perhaps not be inappropriate to quote here, from the pages of the "South African Railway Magazine," an excellent brief description of one of the most interesting of colonial railway journeys, perhaps a little heightened here and there with regard to the game, but otherwise a wonderfully graphic account.

"Never was there such a railway since the world began. In the nature of things it is impossible that there can ever be its like again, for the Uganda Railway is in many respects unsurpassed—wonderful in all. The number of those who have travelled by it is not large—no larger than the number carried by a busy suburban line in a day. But those who have done so never forget.

"It starts from a windswept island in the Blue Indian Ocean, and it ends by the wooded shore of the largest lake in Africa. In between it passes through jungle, swamp and desert; zigzags across plains where elephants play by day and lions roar by night; corkscrews up the sides of outlandish snow-capped mountains; circles round the base of volcanic, cone-shaped hills; meanders by the 'Shambas' and cultivated patches of rude inland tribes; strides longlegged athwart treacherous swamps, and ploughs through the darkness of primeval forests, until it emerges, calm and triumphant, from

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under the flat-topped mimosas by the shelving shores of the shimmering inland sea.

“For its five hundred odd miles it is a truly wonderful performance. On its way it samples every climate, touches every degree of temperature, experiences every extreme.

“At Mombasa, on the low coast belt, the red-fezzed Swahili stoker leans gasping from his blistered engine-box; later, at Limoru, in the frosty highlands, he blows with chattering teeth on his half-frozen fingers and stamps with numbed feet. There it was as hot as any place on this planet, here it is as cold as the coldest. None but a steel-skinned Swahili could stand the change, and do his work and live.

“At the outset it may be well to remember that the railway is a system made up of a single line, without branches” (three branches have since been completed and a fourth is under consideration), “tapping a partly unexplored and wholly uncivilized country; touching one settlement dignified with the name of town, and traversing a land likely to cause an ambitious traffic manager to die of sheer melancholia.

“It is also well to remember that it does not touch the country whereafter it is named. To its peculiarities it adds that of being an anomaly in geographical nomenclature.

“Anyway, there it is. But it was not built as it is. Originally a large proportion of the line was laid temporarily. That was while profane engineers waited, without patience, for slow-moving manufacturers of steel girders and stays and things. Tired of waiting, they built, whenever practicable, a way round. To-day, traces of the first road abound by the side of the existing track. ‘We have not yet built one line to the

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lake,' the Germans say jestingly, 'but the British have built two.'

"When the Uganda Railway was finished, the ostensible reason for its construction—the inland slave trade—had ceased to exist.

"Just at first it looked as if the railway would take rank as a gigantic white man's folly. Then Africa, the inexhaustible, rose to the occasion. In the heart of the continent, popularly supposed to have been given over to fever, heat and pestilence, an unthought-of, fertile delectable land gave itself freely to the invader. Cattle thrived there. Sheep multiplied exceedingly. Game, great and small, mean and noble, ranged the plains and peopled the green valleys when the rain came.

"'The Uganda Railway,' says an authority, 'has literally created a new country.'

"Truly it has. Where formerly was a wilderness—a luxurious wilderness 'tis true, but still only a wilderness—is rapidly arising a land of farms, settlements and plantations, where white men reap and sow and lord it over flocks and herds, great beyond counting.

"And the railway has done it, done it all. Given time, moreover, it will do much more, and East Africa and the Line itself and the Empire will be the gainers.

"But properly to know and understand the Uganda Railway you should take courage and travel over it. The experience is likely to last a lifetime—even a lifetime of travel.

"Four days a week a train leaves Mombasa for the lake, and if you are lucky you may share a carriage with an official who knows the country.

"A great event in the life of the quaint old Arab town is

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this departure of the train. The platform and the station precincts are packed with a solid staring crowd of white-robed worshippers of Allah. Arabs are there, and Somalis, Swahilis, Goanese, Hindus, and all the innumerable in-betweens that go to the peopling of an Arab port on the African Coast for centuries connected by trade with India. The effect is picturesque, if bizarre, and the colour scheme, if orientally exaggerated, is not without charm. The scene has more of India than of East Africa; more of Egypt than of either.

"A feeble interest is apparent in the crowd as the ridiculous little engine, with its tender-box packed high with acacia-scrub wood fuel, pants preparatory to making a start.

"At the signal the train moves off into the jungle, clanks at half-speed across the island, and over a great viaduct to the mainland. Then it begins to climb slowly and laboriously through a forest of palms to the high hills overlooking Mombasa, the island citadel and the blue waters beyond. Later, the little tropical station of Mazeras is reached and passed, and the line dives again into the jungle. Here all is red dust, thick undergrowth and stillness. Only the train rattles through, desecrating and dissipating the Sabbath silence around. Soon a glimpse of white-capped Kilimanjaro, proud, royal, and distant, is caught.

"The train stops and tea is served at a Dak bungalow. The tea is indifferent, but the break is welcome. Dust and thirst take much assuaging, and a dry throat in the tropics makes train travelling purgatory.

"Anon the little brown train swings on to a level, far-flung plain, undulating like a summer sea, framed with hills,

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blue, misty, ill-defined. The Mountain of the Snow has disappeared, and the shadows creep over the lonely track ahead.

"It is dark by the time a stop is made for dinner, served in another Dak bungalow by deft, noiseless Indian waiters. There are few lights, no towns, and every man encountered is an official of some sort, who is only present because it is his duty. Hereabouts men do not live, unless they are paid to do so. Higher up it is different.

"Simba Station, which means 'the place of lions,' belies its name. Lions do not like the trains now. Formerly they liked them only too well.

"At Sultan-Hamud is the spot whereto a former ruler of that name, who reigned at Zanzibar, came in a construction train and marvelled.

"Crossing the long valleys of the Voi and the Athi, the night passes. Dawn finds the train traversing the game country. Here is the eighth wonder of the world.

"Zebras, wildebeest, giraffes, approach the line defiantly, with curiosity or indifference. Sometimes rhinos come too; elephants are seen occasionally; lions roar nightly in the vicinity. Out of a Zoo such an assembly was never seen; but no Zoo can offer spectacle so impressive.

"After the plains come the foot-hills, and Nairobi—yesterday a settlement, to-day a town, to-morrow a city—is entered, and not long after, left behind.

"Again the line climbs upwards. Kenya, the second of the twin white breasts of Africa, shows on the horizon. Molo, some seven thousand odd feet above sea level; the Mau, with its sheer escarpment; Naivasha, with its lake; Nakuru,

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Elmenteita, and other euphoniously named native places pass in quick succession.

"The Great Rift Valley that scars the African Continent with memorial of bygone volcanic conflict spreads itself from the horizon, impressing the mind with a sense of awful magnitude.

"Timber forests, vast, gloomy, impenetrable, follow quickly, and are gone. Another night flies by.

"Morning finds the train steaming through the flat elephant country. A strange unclad people, without shame, stare from the high grass.

"The land of the gentle Wakikuyu, of the warlike Masai, of the treacherous Nandi, is left behind, and the line is in the low country by the Lake, where live the Kavirondo, almost alone among mankind in their disdain of clothing for their nakedness.

"As the day grows the air becomes thick and heavy, the heat moist and intense; and the train slows its pace perceptibly, until finally it runs out in view of a great water, whereon miniature ships lie at anchor, and then, with sudden gladness, you know you have reached Nyanza. For the moment you think only of the great inland sea and its offspring, the Nile; of their romance and history; of the palaces of the Pharaohs in far-off Egypt, and of all the associations and traditions which time has entwined with those names.

"You never forget the Uganda Railway completely. But presently you remember, and then you never forget again."

The above description gives a fine general account of the type of country with which the traveller is about to make

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acquaintance. Nairobi, the capital of Kenya Colony, is the starting point for sportsmen, explorers, hunters and naturalists to the interior of the African Continent, and is the place where safari equipment can be obtained from the numerous agents who are also prepared to engage the porters for a tramp journey in any direction through the Colony.

CHAPTER III

WITH CAMERA AFTER ELEPHANTS IN BUSH-COUNTRY

ON my arrival at Nairobi Messrs. Newland & Tarlton were asked to supply the requisite tent equipment and procure porters for a "trek" of some four months duration through the Sotik country towards Lake Victoria Nyanza. Thanks to the promptness of their manager in charge of this department, the preparations occupied only a few days, and on June 6th the porters were entrained with Kijabi as their destination, some forty-four miles from Nairobi, and the stepping-off point for the Sotik through the parched Kedong Valley. Kijabi is a cold wind-swept hill station about half-way down the escarpment, perched at an altitude of 6,790 feet, overlooking the arid Kedong Valley, which is covered with open thorn scrub, immediately below the escarpment and framed by low hills on either side with several extinct craters. Beyond the scrub extend vast plains and veld, fading away in the distant, hazy horizon; the aspect of the country is typical of the volcanic regions of the Colony.

To describe the more or less monotonous journey from the foot of the Kikuyu escarpment and across the Mau escarpment to Lemek would only weary the reader.

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From our point of view the country begins to be of interest from Lemek onwards. The latter is a meagre village consisting of a few grass huts and an Indian store. While comfortably encamped at the base of some hills surrounding Lemek, under a wide-spreading mimosa tree that pleasantly shaded our tent, we sent out Masai scouts in various directions to obtain news of elephants and, when possible, to locate a large stationary herd.

I had been informed by travellers returning from these parts of the country that migrating herds of elephant occasionally lingered among the hills surrounding the valley of Lemek. The Masai scouts returned in the evening with promising news, and while my companion, Mr. J. H. Barnes, and myself were seated on our camp chairs round the blazing fire (for the night was decidedly cold), we were agreeably surprised by the appearance of an unassuming, and rather timid, "Ndorobo," who claimed in a modest fashion that elephant tracking was his profession, but that he had never before accompanied Europeans in search of this particular quarry. This, I may mention, was the tracker who subsequently led us through endless stretches of veld, up and down boulder-strewn hillsides, through dense tropical bush and thorn-scrub covered country, to various parts of the southern regions of the Colony, in search of the elusive "tembo." He rendered invaluable service in locating these giant inhabitants of the forest and leading me successfully up to my quarry; without him I should not have been able to secure many of the photographs that are contained in the pages of this book.

He appeared in scanty attire—if it may be called attire—consisting of a thin, dirt-covered blanket slung diagonally

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across the body with the corners tied in a knot on his right shoulder; and this garment he conveniently discarded when creeping through a tangle of vegetation. A typical Masai sword of crude workmanship was carried in a primitive scabbard of raw antelope hide. In his right hand he held the long Masai spear, and his left hand usually grasped a small knob-kerry, or slug. The more primitive members of this tribe, as a rule, carry bow and arrows; the poisoned arrows are placed in a case of rawhide and fastened round the shoulder by a thin strap of the same material. Thus equipped they will face all the hardships of the veld and bush alike, living on honey and other produce of the forest. Here we meet man still as a primitive hunter, perhaps not so much by choice as from necessity, gaining a precarious existence from the chase of wild beasts.

The Wandorobo or Wa-Ndorobo (the plural of Ndorobo) are, in these regions, a tribe of degraded Masai and live with the Masai as a kind of pariah caste, and exist on what they get out of the forest apart from the snaring of game. They are found, as a rule, in small communities scattered over an extensive area of tropical East Africa and may, in many ways, be compared with the bushmen of South Africa. In their primitive state they are a timid folk who are singularly patient and skilful trappers, and the snaring of the larger mammals in cunningly contrived game-pits is one of their chief means of subsistence. They hunt the elephant with poisoned darts, and sometimes follow a wounded animal for weeks, until it succumbs to the slow action of the poison. For generations they have adapted themselves to nature and its vicissitudes, and know every inch of the bush and veld alike in the particu-

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lar locality they inhabit. They gorge themselves on raw meat, and swarm like a troop of carnivora round the carcase of an elephant when occasion arises. A further curious habit characteristic of the primitive behaviour of the Ndorobo is to drink by kneeling on the water's edge and applying his mouth to the liquid.

This temporary digression may perhaps not be inappropriate, for this tribe undoubtedly produces some of the finest game trackers in East Africa; a Ndorobo is frequently associated with the ivory hunter in his daily search for elephants.

Some praise their qualities highly, while others are inclined to depreciate their skill. The majority are, of course, less systematic in their tracking than the few who have proved their worth and have been appointed leaders of the scattered Ndorobo communities. Personally, I have found them excellent fellows, once their confidence has been won and their timidity overcome. The native huntsmen we subsequently engaged hardly ever came up to the sterling value of the man we now saw before us—"Kibendoï" he called himself—whose intimate knowledge of the habits of his quarry, and careful systematic tracking and spooring were remarkable. The gauging of the treacherous air currents in dense bush and the information he gained from the smallest trifles, through his amazing woodcraft, were at times almost uncanny.

It is true that he found face-to-face encounters with our quarry exceedingly distasteful, and had, at first, a silent way of making use of his agility to vanish at moments when there was a likelihood of close work with the camera; but we are all apt to feel something oppressively dominating in the close proximity of elephants in dense bush, and prefer to snap our

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game at a more comfortable distance and in more congenial surroundings. After all, it is the Ndorobo's business to lead the hunter up to his prey; everything else then depends on the sportsman, whether in search of ivory or camera records. To the trackers the idea of approaching game with a camera is naturally something novel and bizarre, and they are, at first, inclined to question the sanity of the keen photographer.

Our Ndorobo was promptly engaged, and the next morning, a couple of hours before daybreak, found the camp astir and ourselves on the move in the direction of the spur of an adjacent hill. A tramp of some two hours was needed to round the base of a range of hills and reach a low saddle in the range; this gave convenient access to a narrow valley, which, at some places, was much more like a ravine, flanked by steep, boulder-strewn hillsides on either side. From the accounts the Masai herdsmen gave us, this particular valley had contained a large herd of elephants some days previous to our arrival, and, when leading their cattle to drink in the rivulet at the bottom of this ravine-like valley, they had experienced some trouble from a few nasty cow elephants that, with their calves, were monopolising the adjacent bush. This brook, as yet invisible to our view, ran murmuring underneath a dense roof of tangled vegetation, which we skirted at a higher level along the hillside. It appeared to be the only source of water for miles around, and the well-worn cattle tracks were here and there intersected by the monstrous imprints of elephant feet. The widely scattered dung was comparatively fresh, and bore testimony to the fairly recent passing of a large feeding herd of these great mammals. The morning was cold and nippy, and, though the walk at a later hour of the day would

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have been decidedly pleasant, as it was, the grass was damp with the heavy dew, and I soon found my stockings drenched through. The first slanting rays of the rising sun were just touching the tops of the hill range above us when a faint, but unmistakable, trumpeting sound reached our ears, coming from far ahead where the ravine widened out to an extensive, bush-covered lowland valley, sloping gently towards the bright, sunny veld and rolling plains away in the distance. The herd had, apparently, in the course of a day or two, travelled leisurely down the valley since the Masai herdsmen had seen them near the place where we were now standing trying to catch more of the first welcome sounds. Our Ndorobo had caught these noises a long while before we did, and his trained ear was listening to sounds in quite another direction. As may be gathered, we had entered the valley from the side, over a low saddle in the range of the hills, and had tramped a certain distance down. Higher up, the precipitous, boulder-strewn hillsides receded leaving a wider space for the dense bush to extend up to the very foot of these hillsides.

It was evidently from this bush that our Ndorobo guide was endeavouring to catch some suspicious sound. His attitude became alert, and he instinctively picked up a handful of loose earth and allowed it to trickle between his fingers to gauge the direction of the wind. His fine sense of hearing had apparently warned him that a few of the elusive beasts had strayed up the valley in the opposite direction from that in which the faint trumpeting was heard. True enough, on further listening, the faint intermittent snapping of twigs was clearly distinguishable closer. Kibendoi now kept incessantly testing air-currents by the simple method of dropping de-

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cayed tree bark, which he deftly rubbed between his fingers into a coarse powder, deciding upon the direction of the wind from the fall of the light particles.

The characteristic pose of these folk, when they are intent on gauging the direction of a tricky eddy of wind in bush country, is no doubt familiar to the ivory hunter, but the operation itself remains, nevertheless, always fascinating, and especially so when it is performed at close quarters to the prey, within easy distance of the shrill trumpeting and shrieks of over-anxious cow elephants in their endeavours to keep the straying calves together. The sudden loud report of a snapping tree branch, the swishing noise caused by a trunk tearing these branches through dense foliage, the occasional crack of a broken tree, followed by the heavy thud as it strikes the ground, are all typical noises, and an exciting accompaniment to the wind-testing operations of our little Ndorobo.

When he has gauged the wind and satisfied himself, by means of his acute powers of detecting and interpreting forest sounds, as to the whereabouts of the straying members of the herd, he leads us to the edge of the vast bush. After a final intent moment of listening to the nearest sound our guide discards his scanty clothing, sticks his spear into the ground and slips quietly into the tangle of brushwood. A few minutes' waiting, which seems hours to the impatient hunter, and he is seen appearing, as silently as ever, on the fringe of the bush at almost the identical spot where he entered. This is easy work for our experienced tracker, as he is not even called upon to follow spoor, his ear alone being quite sufficient to enable him to locate the exact position of the elephants. Sounds in the bush are at times most deceptive; but, in the meanwhile, he

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has already actually seen and counted the few elephants that have strayed into this part of the valley. With his spear he indicates the length of the tusks, and exaggerates the size somewhat. There are in reality only cows and young bulls, as we find later. At any rate, they are worth a snapshot with the camera.

We plunge into the bush, and, in the hope of catching one or two in a clearing, I carry my small camera on a strap slung round the neck. Creeping and crawling underneath the tangled branches, we are led close up to the animals and can catch a glimpse of the towering giants among the foliage, calmly feeding, tearing off leaves and twigs with their trunks, and stuffing huge morsels of food into their greedy-looking mouths, all this to the accompaniment of the usual, solemn intestinal rumbling at varying intervals. We are now some fifteen paces from the nearest animal, and the Ndorobo discreetly retires. We find, after cautious manoeuvring, dodging and peering, that there are two cows and a young bull, the latter being by far the noisiest of the trio.

From the snapping of branches beyond we concluded that we had approached a small detached herd consisting of perhaps half-a-dozen members of both sexes. A glimpse was every now and then obtained of a massive body in the background, brushing noiselessly through the foliage. The three elephants, looking a great deal larger than they actually were, thanks to their particular environment of tangled vegetation, were intent on their feeding, and greedily filling their capacious paunches, apparently without the slightest suspicion of our presence. An instantaneous exposure, with even the fastest of modern lenses, was hardly likely to give any result at all

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in this kind of forest light, and I finally decided to await my opportunity on the fringe of a break in the bush, in the hope of getting an exposure as the animals crossed the clearing. However, at the last moment, curiosity got the better of me, and we both moved stealthily forward to get a peep at the size of their tusks. We had crept up to within some ten yards of them when suddenly the nearest cow stopped feeding, raised her massive head and stood motionless for a few seconds. Shortly afterwards the other two followed suit, standing stock still, with their ears partly erect and alert, listening for the first intimation of danger.

This was a sublime sight, and in a kneeling posture I risked an exposure with full aperture of the lens. The focusing was, indeed, an anxious and exciting moment, and the result a dismal failure, as was, of course, inevitable. The click of the camera shutter produced a sudden change in the situation, and with a crash the two cows, accompanied by the young bull, broke back and stampeded towards the denser recesses of the bush, where we heard for some time the continued muffled drumming noise of alarm from the other members of the detached herd. The bush seemed alive with the great beasts, and they could be heard for quite a considerable time rustling down the valley, keeping, apparently, in the denser parts of the bush.

The efforts of the day were ended and brought to nought, as they had not only scented us and heard the working of the camera at our close approach, but had possibly seen us in spite of the thickness of the vegetation. It is curious how often the scent of a white man drives these beasts into a frantic panic, and sends them crashing through the bush; they may,

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however, occasionally behave quite otherwise in their sudden confusion.

Several days were spent lower down the valley in the hopes of meeting with the herd out in the open, but no such opportunities came our way. Admittedly, few animals give the hunter such strenuous work in their pursuit as the elephant does in bush country. You tramp for hours through the parched veld under a blazing tropical sun, tear through thornscrub, climb laboriously up boulder-strewn hillsides, stumble down precipitous ravines, until finally, dead beat and thirsty, you reach the particular bush or forest where the spoor is fresh. After a few minutes rest you plunge into the forest, and often find the growth so thick that you have to push your way through—bent double—crawling and creeping through leafy passages under a low roof of vegetation. The pursuit, lasting sometimes from early morning, before the break of day, till late in the evening, through all this elastic cover, may be rewarded merely by the discovery that the animals have winded you, and are steadily brushing their way ahead in the seemingly endless bush.

A light camp is pitched out in a small open clearing, and a cold and chilly night is spent in miserable discomfort. The arduous pursuit is continued and the spoor taken up next morning: at last you come up to the object of your desire and are convinced, by the spoor deeply imprinted in the slippery soil, softened perhaps by dampness, that the animals are near at hand; frequently, however, the covert is so dense that one can hardly see a yard ahead, and the roof of tangled vegetation effectively prevents the rays of the sun from penetrating into these secluded recesses, where all is darkness or shadow.

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And through all this hopeless tangle your quarry is quietly pushing its way without the slightest effort, at times, perhaps, a few dozen feet ahead of you. It is remarkable how such large creatures can do this and leave so small an opening after their passage. The bush seems to close mysteriously behind their bulky sterns as they cleave their way through. Hunting game in this kind of country, even with the rifle, is trying. Hunting successfully with the camera is at times well-nigh impossible.

After numerous fruitless attempts I was reluctantly compelled to abandon all hope of securing satisfactory photographs of the Masai elephant in this particular locality, and ultimately decided to move farther afield towards the Amala (Mara) River. It was soon evident that in these parts of the colony it was only on rare occasions that the animals showed themselves on the fringes of the forest in the daytime, and the conditions of lighting were then often unfavourable for successful instantaneous work. Here the shy beasts appear to be reluctant to leave the safe and dense recesses of the bush-like forest until the evening hours set in, when they are occasionally met with on the margins of a clearing. They wend their way quietly feeding as they move through the dense vegetation towards the isolated glades, and roam the more open park-like country during the night with little risk of pursuit or disturbance. At early dawn they return to effective cover, but may now and again be met with lingering on the margins of the bush and browsing upon the young foliage on the fringe of the forest. These are the long sought-for opportunities that delight the keen photographer. A number of the accompanying photographs illustrate the Masai elephant appearing

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in such glades in the evening, or else at dawn when they are about to retire into the recesses of their sanctuaries.

I was once tramping after a herd of elephant in the region between the Amala and Mogòr (Gori) Rivers, and had with me, besides my trusted Ndorobo, who had become quite indispensable, another member of this worthy tribe conveniently called "Nosy," after the most salient feature of his unusual physiognomy, which was quite unlike that of the average Wandorobo we had met with in this locality. At all events the name sounded short and crisp, and was more pronounceable than his real Masai name. This good fellow preferred absolute nudity to the encumbrance of any unnecessary garments, and his simple attire consisted of a string of beads round the neck and a hunting knife at his side, strapped round the waist by a rawhide thong. It was evident from his general demeanour that he had been less in touch with civilization than Kibendoï, our first friend of the same tribe, but strange to say he was less methodical in his spooring than the latter. His voice sounded hurried and wheezy, and his actions were frequently precipitate to the point of spoiling our chances, but for all that one could not help liking him, for he was a bold fellow and keen at all times where elephants were concerned. One of his natural weaknesses was an inclination to exaggerate the size of the tusks of the animals he met with, and this caused his reports to be accepted with great reserve. In his opinion every one of the beasts carried immense tusks trailing along the ground, such as hunters find only in happy dreams. But in spite of this failing "Nosy" was a very useful man. At the first shrill shriek of a few over-anxious cow elephants herding their straying

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young together, his nostrils would become dilated and his limbs would quiver from sheer excitement at the prospect of a close approach of the herd.

At last came the day that was to bring us in close contact with a herd. After a tedious tramp from early dawn, following the spoor of a mixed herd, we stumbled at last on to fairly open forest ground from which came at intervals the welcome noises of a community of feeding elephants. After a few necessary tests for wind I followed the two Wandorobo and circled round the straggling scrub on the edge of the bush, entering it from the point of the compass my guides considered the most advantageous. Carefully picking our way zigzag through the thorny scrub, which was cut up into a check pattern by numerous intersecting elephant paths, we cautiously approached the place from which the sounds had, shortly before, seemed to be coming.

The suddenness with which our guides dropped on their knees was enough to warn me that we had stumbled unawares on the herd, which was apparently at close quarters and about to move out into the open. The slanting rays of the sinking sun and the dimly lighted margin of the bush reminded one that evening was setting in, and, although it was still early, the hour had arrived when the great beasts were likely to take their way towards the clearings. True enough the herd was making straight in our direction in more or less single file. The massive swaying head of the leading cow, with her ears every now and then partly cocked, grew larger at every ponderous step of the towering beast, and the lesser members of varying bulk and height followed their leader, silently treading the earth with their mighty pads. I stole on until the two

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Wandorobo gave place to me behind a shoulder-high but dense scrub. "Nosy" was shaking like a leaf from sheer excitement. I was peeping over the bush immediately ahead of me preparing for what I thought a unique exposure when the leader of the herd suddenly stopped and stood to attention like a statue, with her immense ears extended. A tricky eddy of wind wafting our scent, or perhaps the one or two camera adjustments I had made, may have conveyed a faint warning of our presence in the immediate vicinity.

At all events the animal did not appear to be much alarmed. The file of elephants following on the path of their experienced leader halted the moment they became aware of the suspicious attitude of the latter, and the younger ones crowded and pressed against the bulky bodies of their mothers. It was a wonderful sight, and, moving aside, after a short moment's focussing I pressed the shutter release and gave as long an exposure as I could risk with a hand camera. The old cow, mildly alarmed, swayed to the right and moved with a long shuffling stride obliquely towards the denser forest, with the herd hot on her trail. It was at this moment that I heard a yell behind me, and "Nosy," with astonishing rapidity, jumped up from his kneeling posture, and, bounding across the front of the herd, dodging the clumps of scrub and undergrowth with remarkable agility, tried to turn the leader with his barbarous shouts, and so induce the animals to make for the open and give me a chance for a shot either with my camera or the rifle, if needed.

Suddenly surprised and bewildered by the discordant noises, the cow hesitated for an instant, and in her confusion made sudden lunges right and left and spasmodic, deterring

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charges in every direction, not knowing the exact whereabouts of the intruder. All the while she kept up a succession of shrill trumpeting sounds, throwing her trunk aloft at every short rush, with her massive head erect and the large ears fully spread out.

In spite of the dim light, in my eagerness to perpetuate this incident I risked an exposure that in calmer moments I would have considered a forlorn hope and doubtless a mere waste of film. Impulses of this kind do occur and are difficult to explain. I stole from the bush behind which I had previously been standing, and, to avoid the obstructing branches, moved into view of the irritated animal and pressed the release almost at random. In a second I had gripped my rifle, which I had left leaning against the bush within easy reach, and thrown the camera, suspended by a sling, behind my shoulder, wishing at that moment from the bottom of my heart that I had not gone so far in my attempts to get a photograph. After every short rush the aggravated beast stood still and gazed in a puzzled fashion, gradually lowering her trunk, but only to throw it aloft at the beginning of her next advance.

The moment she discovered me the succession of short, ear-splitting trumpeting sounds became intense, and with head held high, ears extended, and trunk aloft, she bore down in an intimidating fashion, as though wholly bent on crushing the intruder. The monstrous bulk of the animal was rapidly shortening at each forward stride, the dim light and the continuous rumbling noise of the alarmed herd behind added greatly to the effect, and the apprehension of disaster momentarily increased. The charge, if pushed home, would probably not have allowed me time to retreat and get out of the way,

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but to my infinite relief the brute stopped on a sudden, lowered her trunk hesitatingly and stood motionless, wondering presumably what kind of creature was standing in front of her. Retreating step by step, avoiding sudden movements and prepared to fire at any moment, I managed to edge behind a fair-sized tree and placed a further eight or ten paces between myself and the animal, which kept for quite a while gazing fixedly at me with her beady eyes.

With a trumpet and a flourish of the trunk she finally made another short rush, which appeared this time to be a more half-hearted one, and was presumably meant as a last attempt more to intimidate than to annihilate the intruder. At any rate it gave me time to slip behind a bush-clump and make myself scarce in the direction of the open, the gainer of a new and strange experience. From later adventures I am inclined to conclude that the Masai elephant, and probably all the other races of the African elephant as well, make these false charges, or what might be called feints, in order to scare the intruder away. The attack in earnest, however, is occasionally begun in identically the same manner. At other times, I have found, the attack is made in perfect silence, and I should be inclined on such occasions to fire before the animal is too close; in other words I would prefer the more noisy demonstration, which to my mind is less perturbing and overwhelming at the moment, and more likely to end in a harmless feint. I was confirmed in this opinion in the course of my experiences with elephants in the region of the Lorian Swamp, which I shall relate and illustrate in due course.

To watch for the first time the reflected image of the giant in this attitude growing larger and larger on the focussing

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glass of a reflex camera is perhaps one of the strangest and most thrilling of possible experiences, and one that is not easily forgotten by the enthusiastic photographer. The long hours of waiting when the herd is first located, the excitement when a selected bull is at length marked down, and finally the speculative work of stalking up to this particular member of the herd until its image, in satisfactory size, is reflected on the ground glass, are all in the exciting game of animal photography. With what pleasure, finally, does the click of the shutter strike upon the ear! It is, to the beginner, a moment of triumph and suspense, such as can only be appreciated by those who have lived through it. Then follow a few anxious seconds while you are getting out of the creature's way without its winding you, and stealing back to prepare for a second exposure.

Speaking of the Asiatic elephant, Sir Samuel Baker says:

"The king of beasts is generally acknowledged to be the lion, but no one who has seen a wild elephant can doubt for a moment that the title belongs to him in his own right. Lord of all created animals in might and sagacity, the elephant roams through his native forest. He browses upon the lofty branches, upturns young trees from sheer malice, and from plain to forest he stalks majestically at break of day—monarch of all he surveys."

And what about his African cousin? A face-to-face encounter with the African elephant of the wilds is, if anything, still more impressive than a similar meeting with his Asiatic cousin. His huge ears fully spread out (more than double the width of the Indian elephant's ears) and his towering height, on an average roughly a foot greater than that of the Asiatic

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elephant, are exceedingly impressive, especially when the tremendous frontal is growing in size at every advancing stride. It is one of the finest sights in nature.

The photograph of a Masai bull elephant here shown in a comparatively open patch of bush was taken in the early hours of the morning, when the rays of the rising sun had just topped the surrounding trees, as may be seen from the sharply defined oblique shadow across the animal's ear. It is rarely that such a favourable opportunity is given to the camera huntsman. This exposure, which was made with a Ross "Xpres" lens of six-inch focus fitted to a quarter-plate hand camera (reflex), depicts the animal at the moment it discovered the writer, who was at the time manœuvring stealthily to gain a favourable view and avoid the tangle of straggling branches of the thorn scrub, which are at all times most trying to the photographer working under conditions of tense excitement. On detecting where I was standing, in full view of him, at a distance of about a dozen yards, he moved deliberately forward a step or two, seemingly as if he could not trust his own eyes. Some eight yards from the lens of the camera he suddenly stopped in the attitude of surprise depicted in the photograph. The picture gives a wealth of detail owing to the close range at which it was taken.

The expression of astonishment, mingled with a trace of indecision, although softened in the reproduction, is unmistakably displayed in the animal's whole attitude. Its gaze is directed straight down on the observer in a slightly oblique fashion, causing the left eye to protrude somewhat out of its socket, while the right eye is directed inwards accordingly.

The proximity was such that one could almost have ex-



A FACE-TO-FACE ENCOUNTER WITH A MASAI BULL ELEPHANT AT A DISTANCE OF APPROXIMATELY EIGHT YARDS

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pected the click of the camera shutter to cause the surprised animal to flinch. An anxious moment followed the exposure while I was retreating, step by step, without losing sight of the beast, until some cover was reached, behind which I could slip stealthily and creep out of the way before the surprised animal could realise what had happened. An eddy in the air currents at such a critical moment might have changed the course of events, and either have sent the animal crashing through the bush in haste to get away, or bearing down on the intruder in sudden confusion. Retreat, however, seems in general to be instinctively preferred by the elephant when he winds a white man. Bulls, I found, as a rule, more retiring by nature; cow elephants with their young are often unpleasant things to tackle with the camera, while a cow elephant in an advanced state of pregnancy is decidedly dangerous to follow up with a cumbersome camera and without firearms.

It is astounding at times to what an extent the patience of these great natives of the African wilds can be tried, as is amply proved by the series of photographic records next shown. The action of their brain is apparently slow, and their behaviour, when not startled, is usually deliberate. The roaring of lions is accepted with complete indifference, but the danger of man's presence is to them an unknown peril. To Indian elephants, as they inhabit jungles that lie adjacent to populated districts, the sight of man is fairly common, and they will, at times, as in the case of so-called "rogue" elephants, become permanently savage and aggressive to human beings. It is, I believe, a question of familiarity breeding contempt, and in the rogue the savagery is aggravated by its exclusion from a herd.

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African elephants, in most localities where they are found, far remote from civilisation, will, as a rule, avoid the white man at all costs. They appear to know him by his scent and occasionally by the strange noises that accompany him, such as shouting, or the report of a gun at close range. The sight of man will often leave a single elephant indifferent for a time. This is not usually so, however, in the case of a herd. The mere appearance of man, without their even scenting him, is frequently sufficient to alarm the cows, always anxious for their young. The Wandorobo tell me that when there are young calves in the herd the presence of a lion in their vicinity will immediately prompt the female elephants to drive the intruder away in their instinctive anxiety to protect their baby offspring, for whom they occasionally show a surprisingly tender affection. Otherwise they show complete indifference to the presence of lions in the neighbourhood. On one occasion, on the Amala River, I had the good fortune to come up with a few elephants lazily sauntering and feeding in an isolated forest clearing, and with some careful stalking managed to steal up to the trio that figure in the accompanying illustrations. The light was annoyingly bad, the time being about five o'clock in the evening, and the surrounding forest had already begun to shut out the beams of the evening sun; this accounts to some extent for the one or two flat exposures among this series.

It may be appropriate here to recount the events that occurred at the time this particular series of photographs was taken, and the conditions under which the exposures were made in the presence of my hunting companion, J. H. Barnes, and our trusted Ndorobo tracker; both followed stealthily in the



THREE ELEPHANTS IN OPEN BUSH CLEARING AT THE MOMENT ONE OF THE TRIO DETECTED THE AUTHOR WITH HIS CAMERA

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wake of my footsteps some distance behind me. We avoided with the utmost care any sudden movement that might have attracted the attention of the huge beasts. Barnes was armed with a rifle, and the Ndorobo kept minutely testing the wind, warning me occasionally with a soft whistle when the air currents eddied in a new direction and were liable to give the animals our scent. The three individuals depicted belonged to a herd which was rather unfavourably scattered among the dense forest growth surrounding the clearing, and which we could hear rustling about among the adjacent thick cover; this added to the unpleasant possibility of a silent approach of one of the feeding giants from either side while I was busily engaged in focussing on the subject immediately in front of me.

In order that I might be able to move about quite freely I had discarded my rifle and left it in the hands of the Ndorobo tracker. In any case, I looked upon it as highly questionable whether a rifle would stop a sudden charge of these animals at such close range without a few seconds to permit of a careful aim, and so left it to my companion to fire in case it should become necessary.

The group of three, which were chosen as "sitters" for my camera, were listlessly lolling about the most open part of the forest clearing when I stole up to the nearest shrub, which was at the same time my last cover. The three loiterers were now less than twenty yards in front of me. An exposure from cover was out of the question owing to the objectionable straggling twigs and projecting foliage obstructing the view of the lens, and I then fully realised that, if it was to have any likelihood of success, the exposure must be made out in the open in

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full view of the beasts. During a brief moment of a not unnatural hesitation, and probably owing to my fumbling at the adjustment knob of the camera, the nearest of the trio became aware of my presence behind the small bush. By quietly stepping two or three paces sideways out into the open, exposed to the staring creature, I avoided every obstruction, and, pressing the trigger of my reflex camera, I obtained the first of the series shown in this chapter. I then quietly worked my way back behind the solitary scrub, peering through the foliage to see whether the animal was in any way startled, and was considerably relieved to find that it was still in the same attitude of mild contemplation, gazing stolidly in my direction, to all appearance vacantly, with its tiny eyes.

The light was now beginning to wane, and while under these conditions I was obliged not only to open the diaphragm to the full aperture of the lens but also to adjust the shutter speed to the longest exposure that would be possible to make with a hand camera without trembling. The time necessary for tearing off a tab from the filmpack adapter and getting ready for a second exposure, while I peered at intervals at my bulky adversary through the flimsy scrub, was indeed an anxious one. Now that I am in a position to look back on those moments, the fact is clear that it would have taken but a few seconds for the ponderous beast to stride up to the scrub and deal with the camera enthusiast in whatever way he chose. If these thoughts had been uppermost in my mind at the time, the adjoining pictures would hardly have reached the reader in such a presentable form.

With the camera ready for a second snap I moved out again into the open and took my stand on the short grass seen



A FEW SECONDS LATER IT BECOMES RESTLESS, AND IS SEEN SWAYING ITS FORELEG IN A CHARACTERISTIC ATTITUDE OF
INDECISION

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in the immediate foreground of the illustrations. Whether it was a question of the animal trusting its own eyesight or not it is difficult to say; at any rate, the second illustration of this series presents our elephant in a somewhat modified attitude.

He is displaying growing curiosity, mingled with suspicion. His large ears, which in the previous illustration were beginning to extend, are now fully erected, and a wavering decision is clearly expressed in the swaying motion of his right foreleg. One of his mates evidently considers my unusual appearance with the camera as a portent of danger, and is seen on the left turning back towards the forest. The light was now getting dim, and I began to doubt whether the exposures would be of any use. In other ways it assisted my object, as the gathering gloom appeared, to a certain extent, to have increased in their minds the mystery of my appearance. Circumstances made me bolder in my enterprise and the next few exposures, out of which I managed to obtain only three fairly successful ones, were taken with more confidence, though under extremely bad lighting conditions.

Another elephant, on the right in the upper of the three pictures grouped together, finding his comrade in an attitude of attention and curiosity, has appeared on the scene at a deliberate pace, and both have settled down to a further contemplation of my extraordinary appearance.

In the middle photograph we see the departing elephant slyly casting a last glance at the camera, and the new arrival is beginning to cock his ears. The two elephants facing the camera finally decide to stroll up and examine the intruder at closer range. In the last of the series, we see both the ele-

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phants striding towards the author, who now discreetly retires, having for the moment no intention of disputing the ground. Moving stealthily backwards, with eyes riveted on my "sitters," I reached the edge of the forest-margin, a few dozen paces behind me, and diving into the brushwood I vanished from the view of the puzzled beasts.

Peering out from a safer distance, with my rifle close at hand, I could dimly make out the outlines of the two elephants as they stalked up to the place where I had first stood. Having scented my spoor, they hesitated for an instant, threw their massive heads erect with the white tusks protruding conspicuously, then wheeled round and shuffled rapidly back into the forest. The two black storks, which appeared larger in the creeping darkness, vanished into the mass of vegetation. Feeling at ease and breathing more freely, we returned to our distant camp. The experience encouraged us as to the possibility of a closer approach to the African elephant, with all the opportunities of study and photography which it renders possible. This, we thought, might open a line of inquiry on future occasions into the relations between the behaviour and the functions of the mind of these interesting creatures in their native wilds.



IT SETTLES DOWN TO FURTHER CONTEMPLATION. AN ELEPHANT ON THE
RIGHT IS ATTRACTED BY HIS MATE'S ATTITUDE



THE LAST ARRIVAL COCKS ITS EARS AND THE ONE ON THE LEFT CASTS
A PARTING GLANCE



TWO ULTIMATELY DECIDE TO INVESTIGATE AND MOVE TOWARDS THE INTRUDER:
THE ONE ON THE LEFT WALKS OFF THE SCENE FINDING THE APPARITION
TOO MUCH FOR ITS NERVES

CHAPTER IV

CAMERA SPORT WITH ELEPHANTS ON THE AMALA AND MOGOR RIVERS

THE evening of the 19th of June, 1921, saw a straggling file of mixed native porters, Swahili, Kavirondo and Kisi, trudging along a winding path across the open scrub country in the neighbourhood of the Amala, to reach at length an extensive clearing on the eastern bank of this river.

They had travelled some twenty miles from Lemek, over hilly country in the cool of the morning, across parched plains later in the day, and through the shimmering veld during the burning heat of the tropical noonday sun.

Wearily dropping their loads on the spot we had chosen for our camping ground, they first quenched their thirst and, sitting down to rest their tired limbs, began a desultory conversation, looking sheepishly at one another the while. A couple of hours later a small village of canvas had sprung up, and a few lean and stalwart Masai from a neighbouring *manita* strolled up to glean a first sight of the new arrivals and thereby satisfy the mild curiosity that lay behind their placid air of indifference.

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A *maniata* in this part of Kenya Colony, occupied by the nomadic Masai, can hardly be called a village. It resembles in some ways a South African "kraal," and consists of a large *boma*, a circular hedge of thorny brushwood some five to six feet in height, forming an enclosure in which the low huts, constructed of wattle plastered with cow-dung, are arranged in a circle with their backs almost touching the brushwood hedge, leaving a large open space in the middle where the cattle are herded together for the night. The height and the density of the hedge vary considerably according to the locality, and are increased where the prowling lions are bolder than usual. The huts are, as a rule, provided with one opening only, about three or four feet high, which is either in the side of the hut or in the front looking towards the cattle space in the middle. This open space is usually a mere quagmire of filthy manure. The boggy ground frequently gives way under the lightest footstep; in some of the *maniatas* I visited, the slimy, oozing liquid from the spongy earth and the abundance of flies are enough to destroy a good deal of the romance surrounding the Masai. Their womenfolk are rarely what we should consider handsome, and are, in addition, exceedingly dirty.

So much has been said and told of the wonderful Masai that I should prefer to leave their description to a more facile pen than mine, capable of doing justice to the charm and all the chief characteristics of this race of East African natives. Suffice it to say that we found the inhabitants of certain *maniatas* on the Amala quite friendly, and others again, as in the case of most of the occupants of *maniatas* near the Mogor, were very agreeable. These people, whose aged chief was called Toroni, supplied us readily with all our little require-



BABOONS IN ACACIA TREES

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ments in the way of milk and other Masai dairy produce. In some places they mixed quite freely with our Swahili porters and Nandi drivers. This may have been partly due to our acquaintance with Toroni. In some cases I have found them sulky and reserved, but they might have proved better on further and more intimate acquaintance. For my part I prefer their bush-race, the Wandorobo. The Masai appear to be on the whole unreliable in tracking and following spoor, I should say rather through their natural indolence than from any lack of bushcraft.

The Masai are no agriculturists, and evidently consider agriculture an occupation beneath their dignity. They are nomadic, and keep frequently shifting their *maniatas* to suit the grazing needs of their cattle, are excellent herdsmen, and live entirely on their herds. Dairy produce is their chief means of subsistence, but they occasionally, and especially the Morans (young warriors of the tribe), bleed their cattle and drink the blood. On certain occasions also they gorge themselves on raw meat.

They rarely kill game, which is a great redeeming point about them. But of all the natives of Kenya Colony with whom I was brought into contact during my travels in the country I much prefer the Nandi tribesmen, who are more agreeable in disposition and perhaps better men all round than the Masai.

After this little anticipatory digression, let me return to our new camp on the Amala. On our arrival earlier in the day we had noticed a few small tents in the distance, about a quarter of a mile away, where we had the pleasure of making the acquaintance of Captain Caldwell, A.D.C. to the Governor

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of the Colony. This gentleman kindly invited us to take pot-luck with him, an offer we gratefully accepted, as our cooks and bearers had not yet arrived. Captain Caldwell placed us under a further obligation by giving us some useful information as to the distribution of the various game animals in this locality; he was at this time, as I understood, voluntarily attached to the Game Department during the absence of the Governor, and he had come to these parts on a special mission.

Seated in the evening round a blazing camp fire in front of our tents, we enjoyed the cold clear evening, and spent the time in making our plans for future excursions and speculating on the likely chances of success in the search for our big quarry in this locality. A faint lumbering noise in the distance announced the arrival of our Cape cart as it made its way over the stony stretches of the veld, drawn by a span of sixteen powerful oxen. The wagon was fully loaded with a number of chop-boxes and a multitude of bags containing the eternal posho * for our porters; and the whole was surmounted by a pair of inoffensive mongrel dogs, which had been saved from the dog pound at Nairobi, and proved in the course of our safari to be a pair of homely, indefatigable, and persistent kitchen-pointers, but, nevertheless, welcome companions.

Early next day, Wandorobo and Masai trackers were sent out in various directions to follow the spoor with which veld and bush alike were intersected, and, if possible, to mark down a detached herd of bulls. Some days were spent in endeavouring to locate the elusive creatures, until finally we had a run of luck, and Dame Fortune gave me the opportunity of

* Posho is the term in East Africa for ground maize, or Indian corn, which is universally served as rations to porters on safari.



ELEPHANTS BROWSING ON THE FRINGES OF THE WOODS AT DAWN



A BULL ELEPHANT SAUNTERING ACROSS A GLADE AT EARLY DAWN

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securing the accompanying views of a feeding herd of the great mammals at early dawn in a beautiful and quite open forest clearing. The light was, as a matter of course, abominable at that early hour of the day, and the few photographs here reproduced are merely the best I could find among a number of dismal failures. The approach had to be effected over practically open ground, and the herd, consisting of some twenty members of varying ages, was widely scattered all over the clearing. On two occasions, while I was busy focussing and peering into the hood of my reflex camera, the soft whistle of the Ndorobo, who was standing some twenty to thirty yards behind me, pulled me up, and I found a few of the herd were strolling on either side of me and were likely to cut my line of retreat and catch my wind. It is exciting work but, at the same time, it is likely to cause a numb feeling in the operator who is on such occasions called upon to bend double and steal back while perhaps one or two of the towering animals, with heads raised and ears erect, stand watching his movements. A strange sensation, and, being without immediate means of protection, you cannot avoid feeling helpless and puny until you have got back within reach of the rifle you had left behind as too cumbersome to carry along with a camera. You grasp it with a little tremor of reassurance, and promptly cast a furtive and instinctive glance over your shoulder to see whether the interested animals are following in your wake.

It is just as well that at such moments the thought of a possible concerted attack on the part of the surprised beasts rarely enters one's mind.

As may be seen from the accompanying views, it is a

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curious spectacle to see the herd browsing upon the vegetation on the fringe of the forest.

In spite of our careful tactics the elephants ultimately received our wind and gathered together with unusual expedition. It was a grand sight to see the members of the herd close up, some of the younger animals startled and flustered and, so to speak, wriggling into position, others staring stupidly towards the point from which they expected the threatening danger, while a few experienced cows unencumbered with young were strutting energetically backwards and forwards like N.C.O.'s drilling a hopeless lot of recruits. The continued rumbling, with every now and then a shrill, short trumpeting sound, conveyed the usual signs of apprehension and alarm. The exposures I made at this moment were timed to the proper duration required for moving objects, but the great factor of the light was dead set against me and many of the under-exposed negatives were beyond all hope.

Times beyond number the exposures proved complete failures, and the first two months in this region were far from a success from a photographic point of view. Meanwhile we had examined countless spoors, old and new, presenting footprints of all sizes, and had taken mental notes of the specimens we met in forest and scrub, at dawn and late in the evenings. As a result we arrived at the conclusion that the animals, although very large in bulk, carried small tusks estimated at thirty to fifty pounds apiece for the herd-bulls and from fifteen to twenty-five pounds in the case of the adult cows.

On one rare occasion only did the Ndorobo strike a big footprint, approaching five feet and a half in circumference, and I decided to track this particular bull elephant and secure



RIVER SCENE ON THE AMAIA

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its complete skull for the Natural History section of the British Museum, in the event of its tusks being sufficiently large and symmetrically curved to rank as a good typical specimen of the Masai elephant,* and representing one of the more distinct geographical types inhabiting the African colonies.

The task of securing a particular bull among a few hundred animals scattered over miles of bush-country was by no means as simple as one would like to imagine, and it would have been very doubtful whether I could have done so without the services of the trusted Ndorobo huntsman Kibendoi, who, with exceptional perseverance, marvellous instinct, and fine bush-craft, introduced me on several occasions to my quarry in the densest and most awkward cover imaginable, so that, alas! I had the ill luck to see him vanish again and again before my eyes without the slightest chance of even examining his head or ascertaining the modelling of his ivory, in spite of my being no more than a few yards from the alert and wary beast. The mighty animal (mighty as far as bulk and height are concerned) became instinctively aware of the uncanny pursuit, and we repeatedly found it in an alert attitude similar to the one depicted in the next photograph. A snapshot of the particular bull we were following was obviously out of the question in the tangle of dense foliage. The photograph, reproduced in this chapter, was taken on the Amala, and shows a solitary individual in thorn-scrub. The attitude is one of intense alertness such as precedes either the crashing flight of the animal in a headlong stampede, or else an attack on the intruder in the first sudden moment of its bewilderment. This photograph is also interesting in other respects, since it was

* Known by the name *Elephas africanus knochenhaueri*.

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taken with a short focus lens, and thereby practically the whole tangle of thorny scrub was favourably brought into focus; moreover, it was made at a range of some twenty feet at the utmost, which circumstance added materially to the clearness of the detail in the scene.

Over and over again the large spoor was obliterated by the countless intersecting footprints of herds, which frequently puzzled even our astute friend Kibendo, who had done some wonderful tracking and spooring across the parched veld, over boulder-strewn hill-slopes, covered with thorny scrub, and through shady forests with tangles of undergrowth and straggling brushwood. On several occasions I was destined to come right up to the quarry in thick cover, after crawling on all fours through the tunnel-like passages leading into the dense recesses of the low forest, and stumbling over twisted branches across the narrow elephant paths, only to find the passage suddenly barred by an uprooted tree and other abundant signs of the strength of these great denizens of the bush. And all these tedious efforts were to be rewarded merely by the sudden crash of the animal stampeding away, or something a little better, though still tantalising, by the passing sight of a black stern vanishing mysteriously before our very eyes, engulfed and swallowed up by the undergrowth.

At times one hears the faint snap of a twig near by, or the slow travelling swish caused by the body of the animal as it brushes through the foliage, and a glimpse may be obtained of a massive head with ears closely pressed back against the shoulders by the packing foliage as it obstructs and resists the passage of the moving beast, pushing its way through with the base of its trunk.



MOTIONLESS AND ALERT, LISTENING TO THE LEAST SUSPICIOUS SOUND

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The next instant perhaps one sees the gleam of a white tusk and a momentary exposure of a great head, with ears outspread, towering in a beautiful setting of tropical vegetation, almost across one's path.

Not until a couple of months later was I to bag my quarry. The desired photo of the living animal which was to accompany the trophy to Europe was not, alas, possible, the animal having clearly become aware of the persistent pursuit. Sometimes he was reported to be feeding in a particular bush in the company of two or three fair-sized bulls, which invariably gave the alarm before the big one could be approached; at other times he was said to have joined a section of the herd. This, as a rule, the large bulls only do when courting, but it was now hard to believe that this was his object, apprehensive as he was of threatening danger from his pursuers. Once a bull has joined the herd he becomes almost unapproachable as the interested cow elephants keep jealous and incessant guard over their Adonis. At the least whiff of tainted wind the cluster of females will invariably give him warning and, as a rule, guard his discreet retreat. The last meeting with this animal may perhaps be of some interest to the reader. Our silent Ndorobo pointed with his finger at the moving foliage ahead, and, having performed his part of the work, he slipped unobtrusively out of the way. I was then left for an anxious while, straining my eyesight and peering from a kneeling posture at the trembling leaves ahead: crawling laboriously forward on hands and feet to within a few yards of the animal, I at last detected the outline of a massive leg, which resembled the base of some tree and blended exceptionally well with the hue of the bark of the tangled creeper-like stems across the leg.

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Fearing that a sudden gust of eddying wind would spoil my chances I aimed at what I thought was a spot behind the animal's ear, and pressed the trigger at the instant when the head of the alert beast had swung back as it was about to escape. The bullet, as is indicated by the tiny hole at the back of the skull (now in the Natural History Museum), had by accident struck the base about an inch or two from the junction of the skull with the vertebra: the massive bulk showed not the slightest tremor as I crept up to it amidst the crashing sounds of the retreat of a second—perhaps also of a third—bull, that had been feeding close to the one I had secured; this last proved to be indeed the individual on whom we had centred our attentions, the measurements of its feet coinciding with the spoor we had been persistently tracking.

The size of the animal can be judged from a comparison with the figure of the Ndorobo perched on the top of the giant's belly, as depicted in the lower illustration. Note the dense bush surrounding the carcass; a couple of dozen Swahili porters spent some hours in clearing the patch so as to enable me to take the photograph. To preserve a remembrance of this little incident our friend Kibendo is depicted in the upper of the two illustrations of the same in his customary attitude when he was absorbed in wind-testing operations. The ivory was disappointing in weight and size considering the enormous bulk and height of the animal. The tusks scaled a little over one hundred and forty pounds the pair.

During our stay on the Amala, we were informed one day by our Nandi driver, who had been visiting some of his friends away in the outlying forest, that one of their community had been killed by an elephant. As the matter had been reported



NDOROBO TRACKER GAUGING THE WIND IN ELEPHANT BUSH



A GIANT WHOSE TUSKS HOWEVER SCALED ONLY A TRIFLE OVER A HUNDRED AND FORTY POUNDS THE PAIR

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to the District Commissioner I had no doubt as to the actual occurrence, but as for the detailed description of the attack by the elephant I was hardly prepared to accept the Nandi's statement without some little reserve. His account was, however, acceptable enough in the main, and I am inclined to repeat it here as an example of one of the African elephant's methods of destroying a human antagonist.

A detached herd of the Amala group of elephants had been feeding for some days in the forest adjacent to the cultivated clearing from which these intrepid Nandis reaped their limited crops for the maintenance of their families. The feeding beasts, on stumbling on to this small patch of cultivation, promptly set to work to make short shrift of the labours of this Nandi community, who evidently turned out in force to drive off the obnoxious intruders by their shouting and other noises; probably one of the Nandis went so far as to prick with his spear the stern of one of the animals, in the nimble way in which these forest inhabitants sneak up to their quarry, deliver the blow and vanish into the bush. At all events, as I was told, the beast slewed round on the instant, bore down on the fleeing Nandi and drove one of its tusks through the man's back.

The other members of the community promptly organised a systematic hunt and, as I gathered from their narrative, pelted the herd of elephants with their poisoned arrows. We stumbled on to one of the carcasses of the elephants after this raid on the Nandis' cultivated patch of ground, and from the condition of the carcass it seemed that the animal had died quite recently. Judging by the emaciated state of the animal's body it was apparent that the poor beast must have suffered

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cruel agonies previous to its ultimate collapse. These placid beasts, I had occasion to observe, will bear considerable suffering and frightful agony with courage and in stolid silence. When badly wounded, they will, as a rule, separate from the herd and endeavour to fret away their agony in complete solitude and seclusion, listlessly feeding at long intervals until a slow death puts an end to their existence. This fact alone is sufficient to make it incumbent upon the hunter to use the most powerful rifles available, so that the suffering of the beast may be reduced to a minimum. There are very few hunters who can with confidence expect to bag their quarry with a single shot from a small bore rifle.

While we are, for the moment, concerned with the way in which these huge denizens of the bush attack and destroy human adversaries, it may be appropriate to quote here the brief accounts of some of our well-known ivory hunters.

The late Arthur H. Neumann, in his excellent book, "Elephant Hunting in East Equatorial Africa," * gives us a lucid account of the attack of a cow elephant in the region north of the Northern Guaso Nyiro River, towards Lake Rudolph. As an experience of this nature is one of the rare incidents in a hunter's life, the passage is here cited in full, for it is instructive, and forms an appreciable addition to our knowledge of the habits of the African elephant.

Neumann described the animal as being of short stature, with comparatively small tusks, and relates the following:—

"The enraged elephant was by this time within a few strides of me; the narrow path was walled in on each side with thick scrub. To turn and run down the path in an in-

* Published by Rowland Ward, 1898. See p. 322.

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instinctive effort to escape was all I could do, the elephant overhauling me at every step. As I ran those few yards I made one spasmodic attempt to work the mechanism of the treacherous magazine, and, pointing the muzzle behind me without looking round, tried it again; but it was no go. She was now all but upon me. Dropping the gun I sprang out of the path to the right and threw myself down among some brushwood in the vain hope that she might pass on. But she was too close, and, turning with me like a terrier after a rabbit, she was on the top of me as soon as I was down. In falling I had turned over on to my back, and lay with my feet towards the path, face upwards, my head being propped up by brushwood. Kneeling over me (but, fortunately, not touching me with her legs, which must, I suppose, have been on each side of mine), she made three distinct lunges at me, sending her left tusk through the biceps of my right arm and stabbing me between the right ribs, at the same time pounding my chest with her head (or rather, I suppose, the thick part of her trunk between the tusks) and crushing in my ribs on the same side. At the first butt some part of her head came in contact with my face, barking my nose and taking patches of skin off other spots, and I thought my head would be crushed, but it slipped back, and was not touched again. I was wondering at the time how she would kill me, for I never thought anything but that the end of my hunting was come at last. What hurt me was the grinding my chest underwent. Whether she supposed she had killed me, or whether it was she disliked the smell of my blood, or bethought her of her calf, I cannot tell, but she then left me, and went her way."

The late F. C. Selous also had a narrow escape in Mash-

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onaland in the year 1878, and his description of the episode, which is here cited from his well known book, "A Hunter's Wanderings in Africa," * runs as follows:—

"Having picked out a good cow for my fifth victim, I gave her a shot behind the shoulder, on which she turned from the herd and walked slowly away by herself. As I cantered up behind her she wheeled round, and stood facing me with her ears spread, and her head raised. My horse was now so tired that he stood well, so, reining in, I gave her a shot from his back between the neck and the shoulder, which I believe just stopped her from charging. On receiving this wound she backed a few paces, gave her ears a flap against her sides, and then stood facing me again. I had just taken out the empty cartridge and was about to put a fresh one in, when, seeing she looked very vicious, and as I was not thirty yards from her, I caught the bridle to be ready for a fair start in case of a charge. I was still holding my rifle with the breech open, when I saw that she was coming. Digging the spurs into my horse's ribs, I did my best to get him away, but he was so thoroughly done that, instead of springing forwards, he only started at a walk, and was just breaking into a canter, when the elephant was upon us. I heard two short, sharp screams above my head, and had just time to think it was all over with me, when horse and all, I was dashed to the ground. For the first few seconds I was half stunned by the violence of the shock, and the first thing I became aware of was the strong smell of elephant. At the same instant I felt that I was not much hurt, and that, though in an unpleasant predicament, I had still a chance of life. I was, however, pressed down on the ground

* Macmillan and Co. See page 364, fifth edition.

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in such a way that I could not extricate my head. At last with a violent effort I wrenched myself loose, and threw my body over sideways, so that I rested on my hands. As I did so I saw the hind legs of the elephant standing like two pillars before me, and at once grasped the situation. She was on her knees with her head and tusks on the ground and I had been pressed down under her chest, but luckily behind her forelegs. Dragging myself from under her I regained my feet and made a hasty retreat, having had rather more than enough of elephants for the time being. I retained, however, sufficient presence of mind to run slowly, watching her movements over my shoulders and directing mine accordingly. Almost immediately I had made my escape, she got up and was looking for me with her ears up and head raised turning first to one side and then the other, but never wheeling quite round. As she made these turns I ran obliquely to the right or left, as the case might be, endeavouring to keep her stern towards me. At length I gained the shelter of a small bush and breathed freely once more."

That in the days of these well-known hunters there were the most wonderful opportunities of obtaining photographic records to illustrate their works is evident. Elephants were then much more numerous, and had apparently not quite the same nocturnal habits as many of the herds of to-day, as may be gleaned from the information of John Hanning Speke, and other travellers of that time. Speke, who, with his fellow-countryman Grant, discovered the Victoria Nyanza, found herds of elephants feeding peacefully on the banks of the lake as they roamed the forests as well as the plains by day. The animals, that are now so timid during daylight, took hardly

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any notice when some of their number were wounded or killed—they merely moved a little farther up the banks of the lake.

But even in those days, individuals carrying large tusks appeared to have been scarce, as in most of the races of African elephant the bulk and height of the animal has comparatively little to do with the size of the tusks. Sir Samuel Baker, writing with regard to the Abyssinian elephant (*Elephas africanus oxyotis*) in Taka and North Western Abyssinia, mentions that a single tusk of a bull seldom exceeds forty pounds, nor do they average more than twenty-five, but in Central Africa they average about forty. Selous, while hunting the elephant of South Africa (*Elephas africanus capensis*), was also content with male tusks weighing forty pounds apiece, whereas Neumann, who hunted the northern type of the East African race of elephant in the region near Lake Rudolph, mentions fifty to fifty-five pounds as being a good weight for a male tusk. The northern type of the East African elephant seems to carry on the whole the heaviest tusks, and belongs to the geographical race known as the Masai elephant (*Elephas africanus knochenhaueri*), with a similar representative in the former German East Africa (now Tanganyika Territory). The latter animal is generally more bulky, but carries comparatively less ivory than those in the northern frontier district of Kenya Colony: we shall have occasion to discuss their characteristics later, but for the moment I will go back to our camp on the Amala and proceed with my account.

Leaving our ox-wagon, with a couple of Askaris in charge, at the base camp on the Amala, we “trekked” in a south-westerly direction towards the river known locally as the

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Mogor, indicated on the map as the Gori, which sheds its water into the great Lake Victoria Nyanza. This safari, which was interesting from the point of view of scenery, was rather a failure as far as concerned securing photographs of the game I was after.

Among the few experiences met with on this trek, which lasted some four weeks up to the time we returned to the Amala, one incident may perhaps be of interest to the reader. From our point of view this particular incident was one of the most interesting adventures that can befall the keen sportsman.

Late one afternoon, after the inevitable severe tramp from daybreak to well-nigh sunset, in search of our usual quarry, we reached a dry, grass-covered knoll from which a far stretching view was obtained of the surrounding country. The undulating plains were here and there intersected by narrow depressions covered with dense bush. The strips of bush extended in snake-like fashion and were occasionally confined to a narrow ravine; at other places the vegetation encroached upon the gentle slopes of the rounded hillocks. The dark foliage of the bush was sharply contrasted against the straw-coloured hue of the parched veld and appeared almost black in the evening light.

The faint but unmistakable trumpeting sound, coming from the nearest section of the strip of brush some little distance below us, was sufficient to set the ears of our Ndorobo pricking; he was standing motionless and silent on a boulder behind us, in one of his characteristic attitudes, shading his spying eyes with the one hand and holding in his right the long Masai spear with which he balanced himself; his left foot

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was planted firmly on the smooth rock, while the other rested conveniently against the straightened knee of his left leg. Such an attitude of repose is common with natives of the African continent in both forest and desert regions, and is rather picturesque and well in keeping with the environment.

Picking up a pair of strong field glasses we were scanning the fringes of the bush, when the trumpeting sounds died away and the Ndorobo pointed towards the bush below.

With the glasses we could quite distinctly make out a pair of cow elephants, accompanied by their young, on the further fringe of the ravine, and making their way staidly across the sloping glade. The young consisted of one, presumably sub-adult, bull and two "totos" (very young calves). It was a delightful sight to see the little ones ambling through the tall grass keeping close to the bulky sides of their stately mothers, in their endeavours to keep up with the long dignified strides of the latter. A few moments later another group broke forth from the dense mass of vegetation and travelled in the same direction as the first lot, after a little wavering on the far edge of the ravine. Several others followed in clusters at short intervals, and we concluded that the bush must be alive with elephants which had got mildly alarmed by a momentary turn of the faint breeze now apparently travelling from us towards some of the scattered members of the feeding herd in the ravine. Not an instant was to be lost in admiration of the beautiful landscape before us, and, with camera in hand, I followed the Ndorobo, who was twirling some dry grass between his fingers, casually engaged in his hurried wind-testing operations.

The intervening glade was soon traversed and we entered

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the ravine, vanishing among the tangle of vegetation containing the remaining members of the herd. The brushing and swishing sounds all round us were ample evidence of the restless animals being a trifle alarmed, and we had an occasional glimpse of a massive black stern just ahead of us being swallowed up by the thick foliage of this dense covert.

The rustle ahead of us a moment before we reached the further edge of the ravine, followed by an immediate silence, indicated that a few of the beasts had brushed through the last thicket into the open glade, where, by peering through the brushwood in front, I could see them making their way in the same direction as the earlier groups. They were just ahead of me in the open, and the straggling line of giant refugees was headed by a few gaunt cows.

The strict Indian file, which they usually observe when travelling undisturbed across a plain, was now discarded, and this, coupled with the long stride into which they had broken, showed that they were now well alarmed. Anxious to obtain a snapshot of the tail end of the line of giants walking one behind another, I ran cautiously behind the stern of the last animal and made a rapid exposure. This was rather an exciting moment as, from all sides, the alarmed feeders behind us in the bush we had just left caught our full wind and crashed forth from out of the dense tangle.

The sudden click of the camera-shutter in close proximity to its posterior made the last member of the departing file turn several times sideways and glance furtively backward; on catching sight of my reflex camera, which I held above the waist-high grass, while I stood for a moment to tear the tab and prepare for a second exposure, the animal became thor-

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oughly alarmed, moving off quickly in a shuffling amble. The fear was promptly communicated to the others ahead, and, just as the whole file fell into an amble, I had focussed and pressed the trigger of my camera for a second time. It was a comical sight to see the tiny calves scurrying through the grass with their short trunks poised forward in their pathetic endeavours to keep up with the long strides of their hurrying mothers. Puffed and breathless, but satisfied that I had made a couple of exposures, of whose success I was, nevertheless, very doubtful considering the waning light, I was fumbling with the film pack adapter when my companion joined me. Pushing our way through the grass, we followed in the direction the elephants had travelled, and reached a knoll about a mile distant from the one we started from, now behind us on the other side of the intervening ravine: the sun was slowly sinking behind some low hillocks in the distance. Topping the rise we were suddenly astounded by the rare sight immediately below us. In a dip of a stretch of park-like country, some six hundred yards from where we stood, was gathered a herd of between eighty and a hundred elephants, consisting of bulls, cows, old and young, and numerous calves of different age and size. What would one not have given for a few moments of reasonable daylight to secure some snapshots of this wonderful assembly of titans?

The sight was almost unique, and I dare say the most excellent photograph would not be able to do justice to anything so impressive. To give the reader a very faint idea, an illustration is here shown of a much smaller herd photographed at early dawn on a rainy day, while the great beasts were gathered previous to retiring into the forest. Better herd pictures



EARLY DAWN IN THE BUSH



A SINGLE MEMBER OF THE HERD

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will appear in the latter part of this work. An instantaneous exposure under such adverse conditions can hardly be expected to render a crisp image of the subject.

Without losing an instant we proceeded towards the herd, which showed signs of being alarmed and of having been hurriedly assembled.

Here and there, the most recent arrivals were still pressing and thrusting to reach what they considered a suitable place among the writhing mass of giants, and the intermittent shrill shrieks of the cows, herding their young, were mingled with short, throaty noises indicative of their annoyance. As we moved forward, down wind, the increasing intensity of our scent added to the excitement of the cows, who were now trumpeting in thorough alarm. The deep droning noises, which at times resembled the peculiar beating of muffled drums, had become universal, and clearly showed their apprehension of immediate danger. What was about to happen they could not guess, and knowing that the herd, after such a disturbance, would migrate for miles from this locality, we thought it wiser to satisfy our curiosity and make the most of the opportunity in the approaching darkness. We had now, by moving from one fitful cover to another, crept up to within seventy yards of the great beasts, and quite a small forest of raised, poised, or gently swaying trunks, their lines here and there crossed by a gleaming white tusk, was visible to the impressed spectators. We stole forward from one isolated bush to another, eager to see whether we could distinguish a pair of good tusks among the herd. At our cautious approach the more timid members of the herd had pressed closer together, and the tips of the lofty trunks were searching in our direction. The brassy trum-

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peting became ear-splitting, and the terrified beasts were crowding each other into the smallest possible circle; the younger animals strove hard to put as much distance as possible between themselves and the threatening danger by wriggling in between the legs of the adults. As one little fellow was forced out of a good place in the circle by some stronger brother of the community, it rushed frantically round the writhing mass of elephants, with its stiffened tail erect, ears extended and back hunched up, shrieking with fear until it had nosed its way back among the mass at some other point of the circle. The bulls, holding their heads erect, and towering above the other members of lesser stature, were anxiously gazing at the spot from which they expected the unknown intruders to appear. They had, at last, detected our stealthy movements among the clumps of scrub at a distance of some forty paces. At the sharp crack of the rifle, levelled at what was thought a good tusk-carrier, which towered over the lot, a few cows dashed out of the densely packed circle and made short rushes with trunks aloft and tusks, pointing aggressively forward, showing conspicuously in the dim evening light; at the same time the animals were trumpeting loudly in their efforts to deter and overawe the obnoxious strangers. None charged home in earnest, but there were a few anxious moments. A concerted advance of a few of these irritated beasts would, in all probability, have ended in disaster. The few crisp reports were apparently sufficient to subdue their intentions. They slewed round, and, after considerable writhing, the leaders of the panic-stricken herd managed to form up their terrified charges into an irregular column, roughly three abreast, with the young eagerly

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pressing against the sterns of their elders and the little babies dodging in and out from beneath the bellies of their parents. The herd, in this formation, moved slowly forward, and took some five minutes to right itself and allow the members to place themselves in more or less travelling formation. They had among them the fatally wounded bull, which a few of the slowly moving titans succeeded in carrying away by pressing, with their heavy bodies in concerted action, against the flanks of their stricken brother. We found, on visiting the spot the next day, that they must have carried him a few hundred paces with them, and carefully deposited the lifeless body among the scrub of a clump of bush. This, to a certain extent, explained the slowness with which the panic-stricken herd righted itself into the irregular travelling column. I took some trouble to ascertain the exact track of the bullet in the carcase, and it was evident that the temple shot could not have been more successful in killing the animal outright. The bullet had travelled clean through the cavity of the brain, an instant collapse as the missile struck the beast only being prevented by the other members of the herd pressing heavily against its flanks. The concerted action of the two or three elephants on either side was evidently sufficient to maintain the lifeless body in an erect posture and drag it along for the distance already mentioned. These copious signs of their colossal strength explain to a certain extent the anxiety of the cows and their nervous shrieks in their endeavours to protect their young in a crush of this kind. They are seen continually warding and guiding their offspring with their trunks.

In our excitement we had not noticed the gathering of the

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dark clouds in the sky, and were still peering through the creeping gloom after the vast column of giants vanishing slowly into the night when a few drops of rain reminded us of the necessity of moving homeward to camp.

This episode may have been a coincidence, and I am inclined to believe that the assembly we had stumbled on was one of their pre-arranged gatherings when about to "trek" away from the locality and migrate into another district. Our appearance may have been the cause of precipitating events and bringing the herd together earlier in the evening than they had contemplated.

We returned to our camp through the pelting rain, not doubting for a moment that this was our first and last acquaintance with these elephants in the locality. An hour or two later, however, to our great surprise, we were to have a second and last encounter with this same herd.

Eight o'clock saw us back in camp wet to the skin. The sky had told us earlier in the evening that rain was to be expected, and rain we did get and no mistake, for it came pouring down in torrents. The camp was almost completely shrouded in darkness with the exception of the weak flickering lights of a few Dietz lanterns and two or three smouldering fires round the porters' flimsy tents. I was busy enjoying the delights of a hot bath in my tent when a loud and frantic shouting interrupted me in my ablutions. It came, as I thought, from the porters' quarters. Shortly afterwards a crowd of terrified Swahili porters thronged round our tents. I appeared most reluctantly from the steaming bath in, shall I say, an attire inconsistent with dignity, and speedily realised the cause of the commotion. The same shrill trumpeting sounds as we

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had heard a couple of hours before, which still lingered in our ears, now came in the pitch-dark night from uncomfortably close quarters, intermingled with the frantic shouting of the porters, the clattering of the heavy raindrops against the tent roof, and a clap of thunder every now and then. The word "tembo" (conveying in this case the meaning that the elephants were upon us) was repeated in every exclamation of the fear-stricken porters. The sounds were unpleasantly close and we expected the herd of elephants to overrun the camp at any moment. Some eighty to a hundred of the stampeding giants might indeed have upset a few of the tents. A flash of lightning disclosed a similar sight to that of a few hours before. The writhing, jostling mass of terrified animals suddenly confronted with our camp were, if anything, in a worse state of terror than our fleeing porters, and turned back as quickly as the unwieldy mass would permit. We ascertained the next morning that what had happened was that the same herd we had met in the earlier part of the evening had travelled in a wide circle, thus avoiding all traces of our scent: there is probably no animal possessed of keener powers of smell than the African elephant. Our camp was pitched in a depression in the sloping glade, surrounded by waist-high grass; the weak flickering lights and damp, smouldering camp fires could only have been visible to the striding beasts after they had topped the rise and stumbled unawares on to our camp ground. The diminishing noises of the retreating herd were quite a relief to us, particularly as the animals moved off without our being compelled to use firearms.

Following their broad spoor on the trampled grass for hours the next day, we found it quite clear from the tracks that

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the column had travelled three or four abreast and that they had fallen into the long stride, "de lange stap," and were trekking across the Mogor River into the Watenda country adjoining Tanganyika Territory.

CHAPTER V

THE SENSES OF THE AFRICAN ELEPHANT

PREVIOUS to a discussion on the senses of the elephant, as far as they may be of interest to the sportsman, it is perhaps not out of place to enumerate the uses of the animal's trunk or proboscis.

The trunk of the African elephant, as shown in the various photographs, presents the appearance of being composed of a number of muscular rings, decreasing in size towards the muzzle into which the end is elongated, and forms a delicate and sensitive organ, seldom used for rough work.

It is capable of being extended and retracted at the will of the animal, and is primarily employed for the purpose of gathering food, it is said to the extent of roughly 600 to 700 lbs. of green fodder per diem,* for drawing water, and to con-

* According to the experiments of G. P. Sanderson, a very capable officer formerly in charge of the Government elephant catching operations in Mysore, an adult Indian elephant of average appetite will consume the above amount of fodder, exclusive of wastage; he found that the customary allowances made by the Bengal and Madras Commissariat Departments were inadequate and were conducive to the high rate of mortality among their elephants. By green fodder is understood the various kinds of grasses, succulent tree branches, sugar cane, etc. There is no reason to suppose, in the absence of data, that the African elephant would consume less food per diem. The vegetation in East Africa is on the whole less moist than that in the tropical regions of the East, and the same weight of fodder would perhaps contain a greater amount of solid nutriment, and be sufficient for the needs of the bulkier African elephant.

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vey such nourishment into the mouth according to the demands of the creature's capacious stomach. It also serves to warn the animal of danger by its sense of smell and its extremely sensitive power of perception by touch. Hence the care with which elephants mostly employ their trunk, and the seemingly wavering manner in which investigations of strange objects are frequently carried out with this organ. Doubtless the lower part of the trunk, and particularly the tip of the muzzle, is the most important part of their superficial anatomy with regard to the guiding sense of touch; at the same time careful observation will show that certain movements of their trunks express in a silent fashion their wants and other emotions of the most elementary nature. A number of their feelings are, in addition, demonstrated by a variety of sounds, some low and others extremely loud. The various sounds elephants make will, in due course, be described and enumerated; these sounds are, however, frequently deceptive to the listener and it is, on occasions, nearly impossible to make out with any degree of certainty whether they are produced by the throat, from the lungs, or by a blast of air from the nasal organs expelled through the trunk. By means of the delicate organs situated internally at the base of the trunk, African elephants are able to detect, when the wind is favourable, the scent of a white man at a distance of a couple of miles, and often even further.

Among a loitering herd of these great mammals in the shady forest or round a pool, a pair may occasionally be seen exchanging courtesies with their trunks. With the same organs the affectionate cow elephants fondle and stroke their young calves, guiding them and warding off intrusive members of the herd. A. H. Neumann, in his capital book on elephant

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hunting, relates a typical incident showing how their affection for one another is expressed with this member. This well-known hunter gives, as a frontispiece to his work, an excellent illustration from the brush of that capable painter of wild animals, Mr. E. Caldwell. The picture, which bears the title "Love-Making," represents a group of bathing elephants, among which one pair, a cow and a large bull, are seen making love to one another, and Neumann's description of the scene ends thus:

"The bull fondled his mate with his trunk and then, standing side by side, they crossed trunks and put the tips into each other's mouths; an undoubted elephantine kiss."

Elephants rarely employ the trunk for striking one another or even man. When molested and thoroughly aroused they occasionally endeavour to reach at the fleeing intruder by holding the outstretched trunk thrown forward in front of the chest, with the tip ready to retract, probably with an instinctive idea of protecting the delicate muzzle of the organ against possible injury by contact with an unfamiliar object.

An elephant's attack on a man must of necessity be awkward, since, as we gather from the accounts of Selous and Neumann, quoted in the preceding chapter, the enraged animal finds itself compelled to kneel on its forelegs, over its victim, and punish the prostrate body by jabbing with the tusks and pummelling with its snout. By the snout is meant the base of the trunk at its junction with the skull, or the part defined by the tusks below and the eyes above. They seldom pummel or push one another with their forehead above the eyes, but use the snout quite frequently.

I have on occasions had the opportunity of watching them

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break a tree on the fringe of a forest, and the accompanying illustration is interesting, depicting four young bulls surprised in the act of felling a tree.

This particular incident is perhaps worthy of a brief account, as a casual observer would be likely to remain under a misapprehension with regard to what was taking place.

One evening, on the Amala, we stumbled on to a particularly noisy herd. The snapping of branches, accompanied by the usual trumpeting sounds and shrieks at intervals, reached our ears from a distance and told us of the presence of a mixed herd, consisting largely of representatives of the younger generation. Arrived at a large bush-clearing I was delighted to see a cluster of young bulls, round a fair-sized tree, pushing with their snouts against the stem, with a pair of the playful beasts on either side of the tree, causing it to sway from side to side by their concerted action. A loud snap warned them of the breaking of the stem; it was curious to note the momentary start and pause in their combined pushing action, after which they proceeded to raise their trunks most carefully and feel for a suitable hold by which they now intended to pull down the slanting, half-broken stem. Meanwhile I had set my camera shutter in readiness and was creeping up towards them, taking advantage of every possible bit of cover along the fringe of the close mass of vegetation until I was within fifty yards of them, when I realised to my sorrow that the presence of scattered brushwood in the intervening turf-covered space was fatal to the use of a reflex camera held at chest-level. There was nothing left for me to do but to move out into the open and make an instantaneous exposure before the animals could turn and take to their heels. The fact that a fifth ele-



FOUR YOUNG ELEPHANTS SURPRISED IN THE ACT OF PUSHING DOWN A TREE

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phant had detected my presence left me with no choice; this particular animal is seen on the left of the group, shuffling back towards the forest. I stole rapidly into the open, and, taking a final peep into the focussing hood, pressed the release at the moment when the four individuals had lowered their trunks and a pair of the young giants were glancing in my direction in a startled fashion, as shown in the accompanying photograph. The two on the left convey the impression of a pair of guilty schoolboys, caught redhanded at something they ought not to be doing. The brushing noise of bulky bodies pressing through the dense bush close to my right, and the trumpet sounds from a few alarmed cows made me beat a hasty retreat, as I soon found myself in the midst of the mildly panic-stricken members of the scattered herd.

* * * * *

In drinking, the liquid is drawn up in small quantities by means of the trunk, the lower portion filling presumably only to a depth of a foot or eighteen inches. With the head raised, the contents of the trunk are discharged into the mouth either by a blast of air through the trunk, or merely by releasing the breath and allowing the fluid to gurgle down the throat. Elephants with an injured trunk are said to quench their thirst by wading into the water and immersing the mouth. When heated, they squirt water over their bodies with their trunks, and, when water is not at hand, they can draw some fluid from their mouth or throat by means which are not yet clearly understood. From the nature of the ejected fluid, it suggests a copious salivary secretion or some other digestive juice.

The opinion is occasionally put forward that these heavy animals have to assist themselves with their trunk or their

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tusks when rising from a lying posture. This is not the case, as the next photograph clearly shows. In rising from an attitude of repose the African elephant will, it appears, first endeavour to hold its head well erect; the tusks are then pointed outwards and the partly curled trunk is apt to rest on one or other of them. The photograph shows the movements of a Masai elephant in the act of gaining its foothold. As a matter of fact, the first movement of this animal was to raise its head from the ground, curling the trunk partly inward. In this attitude it was seen rocking gently on its huge flank, with the two legs nearest the ground somewhat bent and the other or upper pair extended. The rocking movement was thus continued until the feet of the latter touched the earth and the animal had gained a foothold, after which first the fore part of the body was raised erect, followed by the movements of the hindquarters from their kneeling position. The tusks, obviously, come nowhere near the ground.

I have, on several occasions, seen tusk marks of bulls on level ground, and by the depth to which they penetrate into the earth it is apparent that the tusks or tusk—as more frequently there is only a single dent—must have been driven or sunk into the earth with considerable force.

Unfortunately I have never been in a position to witness this curious procedure, and I dare say that there are few Wandorobo who have actually seen it carried out during the day-time. It is curious that the dents are invariably those made by bulls carrying good tusks. There can be no question as to the attitude of the animal at the time. The dents are invariably such as to show that the animal must have been kneeling on its forelegs. They are apt to jab their tusks into



AN ELEPHANT RISING TO ITS FEET

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the soft earth while climbing steep banks when it is necessary, or convenient, to have an extra support for their heavy bodies. In such cases the lower part of the trunk is usually curled inwards. When the bank is very steep they will begin the climb by planting their front knees firmly on the soft earth, two to three feet above their starting level, drawing in their hind-legs one at a time until the pads are almost touching the front feet. The forelegs are now slowly extended, and the knees again placed carefully on the soft earth at a higher level of the bank; the movements are repeated with care and deliberation until the top of the bank is reached. The reverse motions are carried out in the case of a slow descent, all the kneeling being then done with the hind-legs; the trunk remains in this case unfurled. When hard pressed the elephant will slide down a steep incline on its hindquarters with the forelegs extended.

Having so far detailed some of the various uses of the elephant's trunk, which contains the vital and delicate passage to the animal's nasal organs, we may now discuss the olfactory powers of this animal.

The scent of the African elephant is wonderfully keen, and there is probably no animal possessed of a finer sense of smell than these giants of the African wilds; they will differentiate, by scent, the animals in their vicinity, and, with a suitable wind, smell the white hunter from a distance of several miles. Their natural indolence and phlegm, however, frequently leave them quite indifferent until, by the increasing intensity of the smell, they gauge the near approach of the suspected danger. That they can, to a nicety, detect such movements by the waxing or waning strength of the scent may, on

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occasions, be observed from their behaviour in the case of the approach or departure of a moving object.

Anxious and timid cow elephants accompanying a herd of young calves will frequently depart quietly from a district, and travel with their charge for miles at the first whiff of tainted wind, in order to avoid a meeting with mankind. In localities where they have been shot at or repeatedly disturbed, the scent of man, suddenly detected at close quarters, will usually send them crashing through the forest. In the days of Speke and Grant, the animals in the neighbourhood of Lake Victoria Nyanza appeared extremely tame, as they had no reason to suspect that the scent of a white man might mean danger.

It is curious to note that the elephant in Kenya Colony has much less fear at night of the scent of man, but he dreads it all the same from close quarters. It is remarkable to find that some herds, but little molested and living in comparative proximity to a district containing European settlers, should have to a great extent overcome their strong aversion for the white man's scent. Migrating herds have also been known to travel in broad daylight and pass the vicinity of some farmer's homestead. In most of the localities where elephants occur, their present day knowledge of the white man in East Africa is chiefly derived from his scent; sometimes, however, they may exhibit an understanding of human noises, such as shouting, the firing of a gun, etc. The mere sight of a human being may often leave them indifferent for a while. In stalking these animals, it is therefore very essential to keep carefully on the right side of the wind. They appear scarcely to rely on the evidence of their eyes. From the accompanying photograph,



UNAWARE OF A STRANGER'S PRESENCE

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it may be gathered how listless or half-dozing individuals can at times be approached close enough not only to allow the image to show a satisfactory size on the plate, with a lens focus of six inches, but also to obtain a wealth of detail of the subject.

This particular individual, when the photograph was taken, could hardly have been more than half a dozen yards from the operator.

The sudden noise, no matter how slight, of the focal plane shutter will be detected, as happened at the time I made this particular exposure. The metallic click at the release of the shutter brought an astonishing transformation in the animal's appearance, as it suddenly slewed round and faced me with its large ears at full cock. Profiting by the moment of surprise I managed to effect my escape and was greatly relieved to see the beast turn on receiving a harmless shot in the upper part of its cranium.*

James Sutherland, in his interesting book, "The Adventures of an Elephant Hunter," gives the following opinion:—

"I may here add that after every kill I minutely scrutinise the course of the bullet and the sum of my experiences has taught me that, even with the most powerful of modern rifles, I can never be certain of stopping a charging elephant." This statement is, I take it, endorsed by those who have had

*It is a well-known fact that elephants will stand what must seem most severe punishment on the head. Shots striking the upper part containing the air-cells, between the walls of the skull, have apparently not the slightest effect. I have myself witnessed a case where an African bull elephant, in the middle of an alarmed and confused herd closely pressing around him, received several frontal shots in the head with a heavy bore cordite rifle. Each time the bullet struck its cranium the animal threw up its head and appeared none the worse for it. After each shake of its head it continued to stare in the direction of the huntsman until the herd had righted itself and the bull was able to move off.

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similar experiences with the African elephant at close quarters.

As may be gathered, the taking of photographs at close range must invariably be carried out with the greatest of care, and especially by taking advantage to the full extent of the animal's ways and temperament.

These have to be studied somewhat before the sportsman is in a position to gain his object without incurring danger. The close stalking of the largest of African game animals with camera in hand is at all times intensely fascinating to the keen hunter bent on studying the hitherto relentlessly pursued elephant. Much can be learned in this respect from the bushcraft of the Ndorobo hunter and from his methods of approaching his quarry. Camera sport may be quite novel, but the art of stalking these giant dwellers in the African wilds is an old game to the Wandorobo, who have for many a past generation earned the greater part of their livelihood in the pursuit of this noble quarry with their primitive means of destruction. It may be appropriate here to describe briefly the way in which these Wandorobo hunt the elephant, as their method, after all, forms the basis of the tactics of the more modern huntsman; let us call him the camera stalker.

As the present game laws of British East Africa have now put an effective stop to the cruel method of destroying the elephant by means of the poisoned weapons used by native tribes, which after all is the only possible way they can hunt their quarry, it is clear that we must refer to the old-time elephant hunter for accurate information on this subject, and there can be no more authoritative writer on this matter than the late Arthur H. Neumann, who years ago hunted the elephant in the northern provinces of the Colony, towards

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Lake Rudolph. The following account of the mode of hunting is quoted from his book on ivory hunting * :—

“I should explain though, first, that, when after elephants, the Ndorobo hunter carries a wooden harpoon handle (fairly heavy) and a large quiver containing a number of darts with iron heads as sharp as razors, the shafts of which fit into the handle. The darts are smeared with the deadly poison they obtain from a deadly wood † which grows in the mountains,

* “Elephant Hunting in East Equatorial Africa.” 1898. Page 95.

† Whereas in certain parts of Central Africa, notably the Ituri forests, the poison *Strophanthin*—obtained from the seeds of *Strophantus* (*S. hispidus*)—appears to form the effective ingredient in the arrow compositions of the native huntsmen, that which is commonly employed in the eastern equatorial region is, according to various writers, derived from another source.

The preparation of this deadly arrow or harpoon composition is a matter of interest as it is not only used by the Wandorobo but is also extensively known among many other tribes of East Africa. In Sir H. H. Johnston’s “The Uganda Protectorate,” (1902, Vol. II, p. 873) is found the following description with regard to the nature of the poison:

“The powerful arrow poison used by the Andorobo (Wandorobo, Ndorobo), Kamásia, Nandi, and Masai is made from the leaves and branches of *Acocanthera shimperi*. The leaves and branches of this small tree are broken up and boiled for about six hours. The liquid is then strained and cleared of the fragments of leaves and bark. They continue to boil the poisoned water until it is thick and viscid, by which time it has a pitch-like appearance. The poison is kept until it is wanted on sheets of bark. After they have finished preparing the poison they carefully rub their hands and bodies free from any trace of it with the fleshy, juicy leaves of a kind of sage. The poison is always kept high up in the forks of trees out of the reach of children, and the poisoned arrows are never kept in the people’s huts, but are stowed away in branches. When a beast has been shot with these arrows, it dies very quickly. The flesh just round the arrow-head is then cut out and thrown away, but all the rest of the beast is eaten, and its blood is drunk.”

A certain pariah tribe in Somaliland, the so-called Midgén, or Mitgén, appear, according to M. Henri Neuville, to use a similar composition for their hunting weapons, known as *wabei* or *ouabé*.

The exact method of its preparation, as witnessed by M. Neuville, is as follows (“L’Anthropologie”—T.XXVII—1916, p. 378, Notes sur le Ouabé poison de flèches de l’Afrique orientale et sur le tribu des Mitgén):

“They gather a quantity of roots of the shrub that they call *ouabé* and cut them up into very small pieces. Two and a half kilogrammes of this raw material, with about a litre and a half of water, are placed in a clay pot (called *kouss*, an Arab name which is not peculiar to this and serves to designate various hollow objects), and subjected to a prolonged process of boiling, for three to four hours. The decoction is then poured off into a clay pot smaller than the former (called a *bourma* or *derri*, words also in no way exclusive and used to designate various cauldrons or pots of a smaller size than those known as *kouss*). Then

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and are carefully wrapped up in a thin strip of skin prepared for the purpose. On getting near the game he takes out two of these darts, removes the skin wrapping, and, fixing one with the greatest nicety into the handle, carries it with his right hand while the spare one he takes in his left. He then enters the bush perfectly naked, having divested himself of his skin cape, belt with hunting knife attached (a kind of long, heavy, spatule-shaped dagger, called a 'sime,' carried in a sheath), and anything else he may have about him, which he leaves together with his quiver. Creeping stealthily up through the thicket to within a few paces of the nearest elephant (or the one most favourably situated of those next him as he approaches up wind), he delivers his blow with all his strength, and instantly dives through the bush to avoid a possible charge. The elephants having stampeded, he picks up his harpoon handle, inserts his spare dart, and follows up. The most deadly spot to aim at with this weapon is the part of the stomach where lie the small intestines, about the flank."

The lithe figure and the trained agility of the Ndorobo naturally give him a great pull over the white hunter, who is, moreover, not prepared to divest himself of all his clothing

there is added some 100 grammes of *sammak* gum, a thick, blackish gum yielded by the tree called *addad* (*Acacia sp.*) and the pot is placed upon a slow fire. During this fresh cooking process, the object of which is to effect a concentration of the extract which the gum contributes to thicken and render more adhesive to the arrow-heads, the mass is stirred incessantly in order to make it completely homogeneous. The pestle, an ordinary stick, flattened rather than rounded at the end, is called *gouddé* or *coundé*. In order to hasten the process of reducing the poison composition to a thick paste, the pestle with some of the extract adhering to it is from time to time exposed and held over the fire. Finally the product becomes sufficiently compact to be kneaded with the fingers into a ball on the end of the pestle. The operation is then ended, having lasted four to five hours altogether. The poison prepared in this manner is called *ouabé* like the shrub from which it is made. It takes the shape of a blackish paste, in appearance and consistency exactly like what cobbler's wax is in summer. The quantities indicated above produce a mass the volume of which may be compared with that of a hen's egg or a small mandarin orange."

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when he approaches his quarry armed with a hand camera. The sense of apprehension, natural at such a time, can only be partly overcome by repeated attempts, until the instinctive hesitation is momentarily set aside by what we may perhaps define as an ardent and inflexible enthusiasm.

This particular feeling of oppressive uncertainty becomes acute when the animal has suddenly turned, and is directly facing the camera, as in the case depicted in Chapter III. There are few Ndorobo trackers who will stand this momentary strain on the nerves, largely owing to the fact that there is no particular object for them to gain at such moments, and they naturally prefer the line of least resistance. The Ndorobo's knowledge of the animal's habits, although extremely wide in the case of more experienced trackers, apparently does not extend quite so far as to acquaint him with the remarkable patience which these placid beasts may show at times when they are confronted with the sight of the hunter. These trackers can, of course, in no way be compared with the Hamran sword-hunters of former days for boldness and audacity.

The reader may doubtless have gathered from the foregoing narratives that, once located, the stealthy approach to an African elephant in bush country is by no means a difficult operation, provided the stalker remains well to leeward with regard to the wind. The type of country frequently offers sufficient cover, in the way of scattered shrubs, to approach to within a dozen yards of an elephant, or even much less, when the animal is listless and unwary in the heat of the day.

It is a well-known fact that the Hamran Arab aggageers, or elephant hunters, in former days, approached their intended victims to within striking distance with their two-handed, keen-

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edged swords, the blades of which average about three feet in length.

I imagine their approach would first be conducted with the utmost stealth to within a few paces from the stern of the standing, unsuspecting animal, when the exact position of the tendon of the nearest hind leg is marked down mentally, and the final approach over the few intervening paces executed with agility and quickness, making use of a favourable moment, such as when the beast is about to raise its trunk and reach at some tempting twig. The blow once delivered, the animal would at once be to a great extent incapacitated, and the hamstringing of the other hind leg would be a matter of comparative ease for the agile and practised hunters.

In case of failure and a bad cut, it is evident that the huntsman must take his chances and dodge out of the way among the vegetation with what agility he can muster. It would be only natural to expect that the startled victim will, for a matter of a second or two, remain confused in mind and instinctively rush away in the direction it is facing. At all events the circumstances should, in most cases, be sufficient for these expert hunters to get well out of the way of their infuriated victims.

Sir Samuel Baker, in his most interesting work on the Nile tributaries of Abyssinia, gives a very comprehensive account of the Hamran Arabs' methods of killing the elephant, and of their swordmanship as applied to this quarry. It is here, perhaps, not inappropriate to quote his interesting passage relating to those of the aggageers who perform their hunting on foot. On page 117 we find the following description:—

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“Those hunters who could not afford to purchase horses hunted on foot, in parties not exceeding two persons. Their method was to follow the tracks of an elephant so as to arrive at their game between the hours of 10 a.m. and noon, at which time the animal is either asleep, or extremely listless, and easy to approach. Should they discover the animal asleep, one of the hunters would creep stealthily towards the head, and with one blow sever the trunk while stretched upon the ground; in which case the elephant would start upon its feet, while the hunter escaped in the confusion of the moment. The trunk severed would cause a hæmorrhage sufficient to ensure the death of the elephant within an hour. On the other hand, should the animal be awake upon their arrival, it would be impossible to approach the trunk: in such a case they would creep up behind, and give a tremendous cut at the back sinew of the hind leg, about a foot above the heel. Such a blow would disable the elephant at once, and would render comparatively easy a second cut to the remaining leg: the arteries being divided, the animal would quickly bleed to death. These were the methods adopted by poor hunters until, by the sale of ivory, they could purchase horses for the higher branch of the art.”

On being engaged the Ndorobo tracker will need some time, after his first timidity of the white man has been duly overcome, to feel himself sufficiently at ease to show his worth, and much depends in that time on the qualities of his employer. This is a very natural reserve on the part of most forest and jungle tribes.

Once they have got to know the qualifications and peculiarities of their masters it is at times most pleasing to see how venturesome these trackers may become in their endeavours

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to assist the sportsman in gaining his object. They place great reliance in the wonderful agility with which they can dive and vanish into the bush, mostly without even giving their wind to the animal. To them the elephant is still the most coveted of all quarries, and they can hardly ever restrain themselves from urging one to bag the animal. The sight of a camera is of course something of a mystery and conveys very little to them at first, but, after a time, they will enter into the spirit of the sport more from the close proximity to the animal that it demands, and the consequent excitement, than with any idea of gain in their mind. There is a certain sporting instinct that one cannot help admiring in this primitive folk.

The sense of hearing in the African elephant is most deceptive, and one is apt to underestimate their powers of hearing, owing to the fact that they are usually surrounded by a variety of sounds originating from the herd to which they belong; even when the larger bulls are met with, roaming in solitude, the noises they make when feeding and masticating their food are mostly sufficient to muffle a distant sound.

I have had occasion to observe instances where the animals took not the slightest notice of shots fired at a distance of some five hundred yards from their vicinity. A stray individual would be seen to raise its head and momentarily spread its ears, showing that the sound had reached them, but no alarm of any kind would be displayed at the same time. Here again the phlegmatic nature of the animal is such as to leave him indifferent to such distant noises. Their sense of hearing is more in evidence when a few males are quietly feeding in a small patch of dense bush and are approached by the hunter, especially when a solitary bull is aware of pursuit and is

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tracked to its secluded haunts. At such times the approach must be carried out with infinite care, even when the wind is entirely in favour of the stalker. The animal may stop feeding at short intervals and stand motionless and alert to catch the slightest noise; this particular attitude has been admirably caught in the illustration in Chapter IV. At such a moment the stalker will do well to follow suit and stand motionless, prepared for the worst. The slightest snap of a twig or any other sound, and particularly any noise of a metallic nature, will cause the beast to stampede on the sudden or prompt it to attack.

In dense bush, the senses appear invariably more acute and the animals are instinctively more alert than when they are in the open.

I remember that on one occasion the mere gentle swishing noise of the unsuspecting creature brushing slowly through the fairly open bush was sufficient to muffle the sounds that were unavoidable during my stealthy approach. The animal was never aware of my close proximity until the shutter of the camera had been released. Needless to say, the direction of the prevailing air-currents was entirely in my favour.

The sense of touch is remarkably developed in these great mammals and has in some ways been demonstrated in the foregoing pages when the animal's trunk was under discussion. The numerous circus tricks which the tame Indian elephant and its Abyssinian congener are able to perform with their trunks bear sufficient testimony to the fact that their faculty of touch is very highly developed. In the wilds, their nightly tracks will show what they are able to do by exercising this particular sense. The tracks will often lead the hunter over

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the most trying kind of country, over boulder-strewn hill-sides, across ravines and kloofs. Their sight is possibly improved by moderate darkness, but it is at all times deficient and would hardly be of any assistance to the animals on pitch-dark nights. The guiding instincts of their sense of touch combined with their gentle and deliberate movements are, at such times, what they rely upon most. They trust their sensitive trunks and the cushion-like pads of their feet, which they place on the uncertain ground with infinite caution.

Normally, at sundown, elephants can detect the movements of objects at a distance of some sixty yards, but this merely means that their attention is thereby attracted, not that they are able to distinguish one moving object from another. I have frequently stood at that range watching the loitering members of a herd with hardly any risk of being discovered as long as I remained motionless, sometimes even out in the open, in full view of the animals and standing on short grass. I was usually dressed in a khaki shirt and a coat of a similar dull colour, blending well with the surroundings.

Nervous, jerky movements at that distance are likely to attract the animal's attention at once and may prompt the creature either to move off or induce it to throw up its head and strut rapidly towards the cause of suspicion for a dozen paces or so with its ears partly retracted. It will then often stop for a moment and contemplate, in a seemingly challenging fashion, the object of its curiosity; meanwhile the large ears gradually spread out to their full extent. I have on various occasions made it a point to ascertain the behaviour of an animal in such circumstances, and such moments have been among the most speculative in my earlier experiences. The

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several photographs showing this very attitude of the Masai elephant will hardly require further description.

Slow and deliberate movements on the part of the operator at the distance mentioned may in time also attract the attention of the elephant and prompt it to a somewhat similar behaviour; the investigations are then, however, usually carried out with less vigour and the animal may at first show its mild interest by gazing stoically in the direction of the object in a characteristic attitude as shown in Chapter III.

At about thirty yards elephants clearly show that they are capable of distinguishing one object from another, but this only, I gather, when once their attention has been attracted and their interest or curiosity excited and concentrated on the objects. On one occasion, when accompanied by my friend Barnes, who witnessed the taking of an interesting series of snapshots, I found that the attention of the elephants was directed more towards myself with the camera than to my companion, who stood some thirty paces to my left, and whose presence had also been clearly detected. Mildly interested at first, an elephant will by degrees turn suspicious at the sight of man, and may finally become resentful at the intrusion; these feelings are in turn perceptible until they all become mingled together, with a trace of uneasiness and indecision added. The gradual transformations of the animal's emotions are sometimes most interesting to watch and become, to a marked degree, reflected by its changing attitudes, although hardly ever visible on its bland and stolid features. The time that elapses during these gradual transformations, until the moment the animal assumes a challenging or aggressive attitude, is, in the case of a normal individual, sufficient as a rule

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to enable the stalker to make a few rapid exposures with a hand camera, by stealing into a neighbouring bush after each snapshot and reappearing unobtrusively for a fresh one.

Spasmodic, sudden movements should be avoided, for they are apt to be misinterpreted and regarded by the alert animal as a provocation, and the result might prove unpleasant to the camera enthusiast. The moment the wind is likely to turn in the direction of the beast, it will be as well to abandon further attempts to secure photographs: at such moments there is no knowing what sudden course the confused creature is likely to take. It may suddenly back a pace or two, swinging its ponderous forepart round, and depart towards the bush at a comic shuffling amble, or take it into its head suddenly to throw its trunk aloft and bear down on the intruder with a succession of trumpet-like shrieks. The decision in the latter case is, on rare occasions, preceded by a smart rap of the inwardly curled tip of the trunk against the ground, presumably as a last effort to deter the opponent. The assault is sometimes commenced in perfect silence with the head held high and the trunk pendent or partly retracted, the tip curved inward or trailing over the ground. What the further movements are likely to develop into I have been fortunate enough to witness with a herd of elephants in the region of the Lorian Swamp: in such a case, the proximity of the animals demands immediate action, and one is compelled to turn or stop their advance with the gun. I shall have occasion to relate the particular incident in the latter part of this volume.

In several unpleasant encounters of a similar nature with single elephants, defensive action on my part with the rifle was precluded owing to the close proximity of my antago-

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nist, and it became a matter of moving sharply out of the way of the irritated beast as best I could, and taking the utmost advantage of my immediate surroundings.

My companion, who in his day had done a fair amount of professional elephant-hunting, regarded the taking of some of the foregoing photographs with glee and astonishment, feelings that were apparently equally shared by our Ndorobo friends. They had, as they assured me, not considered it possible to try the elephant's patience to that extent. Our experiments, which are corroborated by the series of photos depicting the three elephants figuring in a forest clearing (see illustrations in Chapter III), prove that the nature of the African elephant has often been unfairly represented.

Not contented with this particular series, I have on subsequent occasions satisfied my curiosity by further trials, and found that the animals behaved in much the same way.

The following little incident, bearing, to some degree, on the strength and quality of the elephant's sight, may be of some interest to the reader.

During the few months spent on the Amala, I had for several consecutive days stumbled on the same detached herd of elephants—from twenty to thirty strong. Each of these small herds, apparently, forms a family in which the members are closely related to one another. Some of this little community had, on several occasions, witnessed the strange sight of my reflex camera, but, thanks to the careful methods of the Ndorobo Kibendoi in gauging the wind during my close acquaintance with the herd, they were never seriously alarmed, as the mere sight of man often leaves the peaceful giants indifferent for a time. Their mild perturbation had no doubt

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been duly communicated to their brothers, sisters and cousins. Late in the afternoon one day, this herd was located in a stony, bush-covered ravine, and the boulder-strewn hill-side suited my purpose for close stalking.

The evening was beginning to set in when two of the herd began brushing their way towards some open ground: they had barely reached the fringe of the dense vegetation, which was here and there interspersed with euphorbia trees, when the animal nearest to me detected my movements, as I stood with my camera on a boulder overlooking one or two intervening shrubs which obstructed my view a little at the outset. The distance was hardly forty paces. This first one to be attracted by my presence happened to be an adult cow, and she stood motionless, facing me for quite a time, gazing intently with partly extended ears. The distance was not quite to my liking as I could not obtain an image of satisfactory size on the focussing glass. Quietly slipping off the boulder, I stole forward, taking advantage of the cover offered by a few of the larger rocks and a bit of low scrub here and there, until I was within a couple of dozen paces of the animal. Slowly rising from among the scrub on to a small mound I was conscious of a most disconcerting feeling at seeing the beast's attention riveted in my direction; for, though I had chosen a fairly safe line of retreat in case of emergency, I had long before discarded my cumbrous rifle. The placid creature had by now cocked its ears to the full extent, and after a moment's focussing I pressed the release of my shutter. This particular animal figures in the accompanying right-hand illustration. Its mate had not as yet broken through into the open, and remained feeding and lingering on the margin of the



GAZING INTENTLY AT THE PHOTOGRAPHER



AMONG THE VEGETATION

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tangle of vegetation. The cow, of which I had by now taken another snapshot, at length swung slowly round and slipped quietly into the bush, leaving me well contented with my efforts; a few minutes later, however, she reappeared from the identical spot where she had entered the bush. Splashing sounds, accompanied by the usual trumpeting shrieks, from amidst the dense bush, indicated the presence of an unruly bathing crowd of younger elephants herded by their parents.

The inquisitive female had by now occupied practically the same ground on which she had stood before and gazed anew in the direction of the mound which I had recently evacuated. I was peering at the animal from a safer distance higher up the hillside, curious to see any further developments in its behaviour. A thoughtless movement on my part was quite sufficient to disclose my new position; all at once, I became aware of an energetic rustling in the bush behind the placidly staring dame, and a large herd-bull burst forth from the thicket, with decided vigour in his actions. He strutted energetically with head erect and ears cocked towards the intent female; he was wet all over his body with the moisture dripping from his belly as though he had been interrupted and called away from his ablutions. On reaching his mate he promptly slewed round, gazed steadfastly at me for a second or two before I had time to focus the lens on him, and, wheeling about, crashed back into the bush, followed by the cow, thereby sounding the warning for the departure of the herd. From his behaviour I gathered that the bull had been called upon to verify the rumours current among the herd of a strange and elusive being (meaning myself with the reflex camera). The adult female that came first on the scene was clearly not familiar with my appearance,

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and had resorted to the wiser head for an explanation; the bull was obviously one of the members who had seen me before and recognised the apparition at first sight. That these animals can distinguish objects fairly accurately at thirty to forty yards, if they have any reason to give them particular attention, is therefore quite evident.

The utterances of the African elephant comprise quite a number of varying sounds which they use in communicating with one another and expressing their wants and other feelings; in several instances, however, their emotions may also be expressed silently by movements of the trunk. The meanings of the various sounds are at times very hard to interpret. Some of the sounds are produced in the animal's throat and issue forth from the mouth; others originate in the region of the nasal organs, at the base of the proboscis, and are emitted from the orifices of the trunk. The sound in the latter case is probably produced in a somewhat similar manner to that of a man blowing his nose, but is naturally infinitely more intensified, and resembles a blast from a shrill trumpet.

On close comparison of the utterances of the African elephant with those common to its Asiatic congener we shall find no difference whatever, and it is only reasonable to suspect that there can be hardly any difference in the meaning of the particular sounds. There are the usual trumpeting noises from the trunk, shrieks shrill and loud, a continued hoarse rumbling from the throat, short or prolonged roars from the lungs, squeaky noises from the mouth, and the short throaty noises used by the calves when calling to their mothers. The brief and well-defined blast of air expelled from the muzzle of the trunk, accompanying a sudden rapping of the curled

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tip against the ground, is perhaps one of the most curious among the sounds now and again made by the animals. They can all be studied at leisure during the elephant-catching operations in any of the Feudatory States in India, where these so-called "kheddah" operations are quite common. G. P. Sanderson, in his capital book, "Thirteen Years Among the Wild Beasts of India," gives a comprehensive account of the methods of capturing and taming elephants in India. The difficulty in gaining an equally intimate knowledge of the sounds made by the African elephant in its native wilds is not so great as one would imagine, but an accurate interpretation of the numerous noises and an understanding of their respective meanings is quite another matter, and I doubt whether even the most capable Ndorobo tracker would be in a position to enlighten the keenly interested sportsman correctly as to the exact meaning of the many individual sounds uttered by these animals.

Let me attempt to enumerate the more common of the sounds and noises which they make, and allot to each the probable meaning, or cause, as far as I could gather. On the approach of a solitary, contentedly feeding animal that feels completely safe and secure in the dense tropical vegetation, one may distinguish among the noises produced by the animal, apart from the snapping of twigs, swishing of leafy branches and other extraneous noises, the following:—

(1) The low intestinal rumblings at certain intervals, due to natural causes in the digestive organs.

(2) The intermittent voiding of wind and parting with dung; the latter occurs with fair regularity every forty minutes or so, and is at times quite a useful indication to the tracker.

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(3) The occasional flap of the huge ears against the withers.

(4) The noisy chewing and munching of young twigs, leaves and bark.

(5) A low squeaking sound from the mouth, which is rarely heard when an animal is feeding in solitude, but may now and again be detected on the close approach of a cluster of feeding members among the herd. This particular noise indicates contentment or pleasure, and similar emotions are also expressed by a low purring rumble, apparently from the throat. A courting bull may at times utter the latter noise on approaching its mate.

The most common sounds from a mixed herd of cows, calves and herd bulls may briefly be enumerated as follows:—

(1) An occasional short and distinct roar from the lungs conveys an expression of resentment or fear. Anxious cow elephants utter this occasionally to collect or reprimand their straying calves when the herd is busily feeding in dense bush. An elephant struck by a bullet at close range and startled by the sudden shock may produce a deep, short roar.

(2) A continued rumbling noise often occurs when the members of a feeding herd are about to become alarmed. This noise undoubtedly signifies apprehension of some unknown danger and resembles at a distance the drone from muffled drums.

(3) A shrill trumpet at intervals, when uttered by the cows of a herd, may mean either resentment or anxiety. An elephant advancing towards an intruder sometimes uses the same sound for intimidating: with an alarmed herd, when the members are crowded together some distance from cover,

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the loud trumpetings convey their anxiety, or they may also be intended as a threatening demonstration.

(4) Shrieks from the cows are generally uttered to warn off their unruly calves. A feint attack is invariably preceded by a shriek or a succession of short and shrill trumpet-like sounds. The same noises occasionally precede an assault in earnest.

(5) One of the most common noises in an alarmed herd is the loud, continued rumbling sound, presumably coming from the animals' throats, expressing apprehension of immediate danger. When a severely disturbed herd is scattered in the open, I have known the elderly cows to strut about making this continuous sound until the widely separated individuals are collected previous to a retreat into cover. A wounded animal, or one brooding in anger from some other cause, will at times express its agony or resentment by producing a similar sound, but in a somewhat deeper and lower tone.

(6) Short coughing sounds and other throaty noises are frequently heard from the calves, and apparently serve to convey their wants and feelings to their mothers. Similar throaty noises uttered by sub-adult, or adult members, may be prompted by mild irritation against some brother individual. Baby elephants squeal at times when they are terrified, and creep instinctively for protection under the bellies of their parents, and that is the reason why they are seldom visible among a gathered herd.

The foregoing summary indicates the difficulty of making a sharply defined classification of the most likely interpretations of the various sounds, as the same sentiments are occasionally expressed by the throat as well as by trunk noises.

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A good deal of misapprehension prevails regarding the character, nature and temperament of the African elephant. That it is by no means of the savage temperament often ascribed to it by the uninitiated sportsman may well be gathered from the incidents related in the foregoing pages, accompanied, as they are, by infallible photographic records. These prove, on the contrary, that the normal African elephant in its native surroundings, when not under severe provocation, is a patient, retiring, and even-tempered creature.

The East African representative, known as the "Masai" elephant (*E. a. knochenhaueri*), is like all the present-day members of both species, the Indian and the African, gentle and tolerant by nature, and mainly concerned with events in its immediate environment: the sphere of the animal's interest in its daily existence is very limited. It is very likely that these same characteristics in disposition existed in the extinct species of bygone ages.

The necessity of keeping its capacious stomach filled with green fodder containing little nourishment in comparison with the bulk, compels the elephant to spend the major part of its time in gathering what is needed with its trunk, and masticating the food in the leisurely fashion typical of these great mammals.

They prefer to browse, but they will also graze and feed on a variety of herbaceous plants. In the bush their diet consists of leaves, twig ends, and young shoots of shrubs and leguminous trees. They also chew tender tree bark and are fond of fruit of all kinds, and show great partiality for beans and corn, whenever they have a chance to raid the crops of the native cultivators inhabiting isolated forest clearings.

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In open forest glades elephants may at times be seen feeding on grass, plucking a bundle every now and then with their trunks, waving it listlessly about, and tucking it into their mouths.

They are slow and seemingly stolid in every action, but this does not necessarily imply that they are by any means wanting in intellect. It is common knowledge that elephants possess a reasonable stock of sense if they choose to employ their sagacity for any particular purpose to suit their ends.

In their everyday life the easy, unencumbered existence, with food in plenty whichever way they turn, demands little exertion of their power of reasoning.

They show, in their native surroundings, an intellect not surpassing that, for example, of the average carnivorous beast of the African wilds.

The perfect ease with which the elephant performs its daily duties with the trunk would naturally lead the casual observer to believe that the animals are possessed of a much higher sagacity than is actually the case; but these movements are prompted essentially by instinct and habit, or by the most elementary of feelings and emotions. Watching a herd of the animals feeding in an open forest clearing, browsing upon the foliage, or sauntering leisurely across from one patch of bush to another, is a fascinating occupation for the interested observer, and a soothing one except for the weird, though often groundless, apprehension of danger from the silent-footed beasts brushing close past him. Such observations are by no means as venturesome as they appear to the uninitiated sportsman, provided they are carried out with the assistance of an experienced tracker and a systematic wind gauger. Face-to-

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face meetings are at all times nasty incidents, and particularly speculative at close quarters. The danger is, at such times, soon enough brought home by the behaviour of the Ndorobo tracker in placing a reasonable distance between himself and the animal.

It is remarkable that even in the headlong stampede of a herd, an elephant will show—after the first rush of a dozen paces or so—an instinctive aptitude in avoiding a collision with trees and stumps. An observer standing behind a thorn tree of average size will usually be quite safe, provided he restrains his emotions and quietly watches the stampeding animals brushing past. The natural inclination, under such conditions, is to dash out of the way of the madly rushing crowd: this is precisely the very worst thing to do in the circumstances. In dense bush or in forests, with thick undergrowth, the danger of being trampled on is less unlikely, and many keen elephant-hunters are known to have come to grief in this way. Elephant-stalking, even under the most favourable conditions of wind, is at all times attended with a certain amount of risk: in the vicinity of a herd there is always the chance of attracting the attention of straying animals, and being placed in that most embarrassing situation when the unarmed camera stalker finds himself in turn stalked and watched by one or two of these placid but formidable animals.

The feelings that overcome the sportsman at such moments, inspired by the overwhelming presence of the huge beasts, as they stand, with ears spread wide, gazing intently down at the puny object of their curiosity, can be better imagined than described. The wiser heads will, at such moments, make themselves scarce and follow the lead of the

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tracker, who is by this time some distance away, well out of reach. A more stubborn and ambitious observer would linger on and find his opportunity to make a hurried exposure, and such an exciting experience will teach him that he may still linger on for a few seconds until the animal finally raises its massive head and holds it erect with tusks pointing aggressively forward. This is usually an attitude of warning, and at this moment it becomes high time for the enterprising stalker to make a quiet but prompt departure from the scene while he is permitted. The next instant may find the animal moving up with long strides towards the spot on which the observer previously stood, or departing with undue haste towards the nearest bush or other equally effective cover.

On scenting the spoor of a white man the elephant will invariably show signs of agitation, and what it does next depends entirely on the individuality of the particular animal. It either will turn about and retreat to the forest with the characteristic shuffling amble of elephants when their fears are aroused, or it may take the offensive and make a sudden short rush towards the retreating stalker, more apparently with the object of deterring the intruder than with any deliberate or serious intention of injuring him. These actions are, as a rule, performed without the usual accompanying noises uttered when the animals are apprehensive of an unfamiliar danger. With truculent beasts, their resentment of an intrusion is occasionally expressed by the sudden energetic way in which they stand on the ground recently vacated by the intruder, and trample the spot viciously, crushing every object below their ponderous feet, their behaviour resembling that of a stubborn and fretful child. I have, on several occasions,

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been in a position to witness these proceedings, which give one an insight into the individual mentality of the animals on sudden close acquaintance with a white man's spoor. Normally, elephants, when aware of man's scent, will do their utmost to avoid his further acquaintance: their instinctive timidity and retiring nature, where man is concerned, are beyond a doubt, and the numerous little incidents that occurred during my stalking adventures have taught me conclusively that the African elephant has a rare number of good points and few vices. Taking it generally the animal is suspicious of any unfamiliar scent, but this I believe can only have been developed to its present degree in consequence of the centuries-long persecution of the race; it is now by nature quick to scent danger, and its fears are easily excited by any strange movement at close quarters. On the rare occasions when these animals are aggressive, their actions may be primarily attributed to the sudden confusion into which their minds are flung on detecting something unusual and strange in the appearance of man in their close proximity. At a safer distance the same individuals will, as a rule, not only avoid such aggression, which appears especially distasteful to their indolent and placid nature, but they will endeavour silently and unobtrusively to leave that particular locality.

Cow elephants are usually more suspicious than the bulls, although the former, as carrying less ivory, are much less harried by the pursuit of hunters. The females, in the natural course of events, have to carry far more responsibilities than the bulls, and particularly so when they are with a large herd containing a number of young calves. It is then interesting to observe the considerate way the leading females accommo-

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date their stride to suit the youngest member of the herd, and adjust the length and duration of their marches accordingly. They show far more activity than the bulls when the herd is interfered with. These placid creatures have quite a good stock of courage, which may occasionally be evinced by the silent and dignified manner in which the wounded beasts suffer what must be, according to our views, the most frightful agony.

It is quite a treat for the interested observer to watch the many tranquil family scenes among a herd of feeding elephants, broken into small groups, and such are their peaceful habits that it is hardly possible to remain under a misapprehension and describe the animals as aggressively disposed.

There are, of course, exceptions to every rule and an occasional individual may be found to take the offensive without the least provocation and be as vicious in its behaviour as a cow elephant invariably is when pregnant. I am inclined to think that there may be some valid reason for such truculence, and that the animal's temper may have been severely tried by some unknown cause or recent injury.

By careful and methodical stalking, and taking every advantage of the wind, the members of a herd may be found in the heat of the day sheltering in some shady forest, leisurely feeding, browsing casually upon the leaves and twisting branches, or listlessly toying with some sprig or strip of tree bark with their trunks. Here and there they stand in small groups around a cluster of trees, some half-dozing, others standing about, flapping their great ears, with one or two of the staid mothers keeping careful watch over their young: some distance from this group we may perhaps find a pair of play-

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ful young bulls indulging in a kind of sham fight, wrestling with their tusks interlocked and their upraised trunks intertwined. The cows are wonderfully gentle as they stand fondling their sturdy little calves; and now and then a tiny fellow, perhaps only some few weeks old, will be seen sheltering beneath the bulky, motionless body of its mother.

Elephants are rarely seen by white hunters to lie down, and even to the Wandorobo such a sight appears to be uncommon. At dawn or in the evenings they may occasionally be seen wallowing in mud in some isolated forest clearing.

On showery days, one may come upon a herd of elephants at their peaceful diversions, round a salt-lick, forming artistic family groups as the scattered animals puddle about the rain-soaked ground, always gentle, sedate and deliberate in their slow movements. Here we find one member of a group quietly rubbing its back against the stem of a tree, or playfully peeling strips of bark with its tusk, while others, which have just appeared from their wallowings, stand about among the low scrub, stained with the colour of the mud, or loaf around in a seemingly aimless manner. Another has discovered a patch of dry earth below some bush and is seen gathering quantities of it with its trunk and strewing it over its back. Similar tranquil scenes can be witnessed by a careful stalker, when the animals are gathered round an isolated pool or on the banks of a river. These quiet pleasures occupy the remainder of their day, when they are not feeding or dozing in the sheltering depths of the bush. The cows are mostly occupied with their young, suckling the little baby calves, watching their straying brothers, which they keep warning off at intervals with a shriek or a shrill trumpet, breaking off the higher

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branches for them and generally attending to the wants of the younger generation. Elephants will show their likes and dislikes to other members of the herd, and their preference for one or two particular individuals is often curious to watch and may sometimes treat the observer to a very uncommon sight. A strange instance was described by an old-time elephant hunter, who had seen a large herd-bull straying away from the herd for some considerable distance in the company of a young calf; it must indeed have been a curious sight to witness the mighty beast stalking sedately in the company of its tiny infant-comrade, as happy as a pair of sandboys.

Large male elephants, usually carrying a fine pair of tusks, are often found feeding quietly alone in isolated bush far away from the noisy herds, the society of which they shun as being too fussy for their taste. They may, at other times, be accompanied by several adult or half-grown bulls. The curious attitudes which the straying members of a herd assume as they are suddenly confronted with the sight of mankind has been amply illustrated in the foregoing photographs, among which the illustration in Chapter III is perhaps the most remarkable of its kind. It shows the Masai elephant in his native environment, at the shortest distance from which the camera huntsman is ever likely to wish to snap his object. The surprised attitude of the great beast as it finds its passage momentarily barred by the puny figure of man is interesting from the point of view of the naturalist as well as from that of the keen sportsman. The detail in the photograph offers much for study to the artist and the taxidermist alike. Almost every line of the beast's features can be traced on the massive head, as it stands facing that strange object which a

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man with a camera must obviously appear to the elephant's mind.

The numerous sketches and paintings of African elephants which come, from time to time, to one's notice are rarely quite perfect, mostly lacking in truth of detail: some are little more than caricatures. The attitude of this giant animal, as it stands with its towering stature, head erect, ears cocked and tusks pointing forward, with one ponderous leg slightly advanced, presents an uncommonly magnificent sight. Even this particular portrait of the Masai elephant hardly does sufficient justice to the original, as, in reality, the weird impression conveyed to the observer at that moment by the animal's height and colossal proportions adds considerably to the effect; it is of course beyond the power of the artist or photographer to depict such a subject in all its superbness.

What more imposing sight in nature can be imagined than a long line of migrating elephants, as the majestic beasts travel in Indian file across a stretch of open country, with their serene and composed leader pacing at the head of the column: the gentle, rhythmic rise and fall of the massive heads, with each advancing stride of the grey line of staid giants, combine to make the impressed observer think of a scene of the imposing mammal life of a bygone age. No photograph can hope to convey in all its reality the magnificence of such a spectacle, while words fail to describe a fraction of the ideas in the mind of the spectator.

Another grand sight, but perhaps of a less peaceful nature to the observer, is witnessed when a large herd has become thoroughly alarmed and the frantic members are seen unconsciously bearing down straight in his direction, with ears

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extended, trunks poised in front of their immense chests, their quick bobbing heads growing rapidly in size and their gigantic bodies foreshortening with each approaching stride. The intermittent deafening shrieks and shrill trumpeting of the stampeding boasts, growing in loudness with every fraction of a second, and the regularity of the beat of ponderous feet announcing their rapid approach are rather trying to the nerves of even the most imperturbable eye-witness, sheltering behind the insignificant cover of some isolated shrub.

Accidents, on such occasions, can occur through want of a rigid control over one's feelings, which are liable to run riot and prompt a confused spectator to dart across the path of the maddened and panic-stricken beasts in a fruitless endeavour to get out of their way. Needless to say, this would be the very worst procedure in the circumstances.

* * * * *

We all feel a sense of loss when we hear of any type of animal life, however humble, becoming extinct. We do not, perhaps, feel the same sense of personal loss at the extermination of a whole race of animals as we do in the case of a favourite domestic creature, yet we cannot fail to be impressed when the time of their extinction is in sight.

That the African elephant is doomed in course of time to perish from this world and become extinct like many of the other giant mammals of the past is already partly confirmed by the extermination of its Cape representative in the southern part of the African continent.

The fact that, in some localities in East Africa, elephants have to some degree altered their habits and become more nocturnal in their ways is apparently a step in an unconscious

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struggle for their existence. No one will doubt that the game laws at present in force in Kenya Colony have shown results in the direction of their preservation, yet those laws are hardly adequate to meet the circumstances in view of the rapid spread of civilization in the Colony. Moreover, the bush areas, even in less inhabited parts of the country, in which elephants are still fairly abundant, show signs of receding. They are in course of time destined to revert to open veld, primarily through the devastations caused by the feeding herds of elephants themselves. Unless measures are taken to preserve and maintain the appropriate area of bush tracts, and thus secure their permanent habitations for the future, these herds will be compelled to interfere with the tillage of the ever-increasing number of settlers, and become in due course a serious nuisance to the farmer. Even now, while I am writing these lines, I am reminded of the complaints from enterprising settlers with regard to the damage inflicted on their crops by roaming herds of elephants, for whose destruction they are incessantly clamouring.

The migratory habits of the elephant in East Africa presumably have developed through long course of time to their present stage: this is chiefly owing to the continual decrease in the areas of bush and forest, which sometimes makes it imperative for a large herd to travel across many miles of veld from one bush-covered area to another region in search of an adequate food supply. The destruction which these ponderous animals incidentally cause to the vegetation during a few weeks' stay in a limited bush area, which they have chosen as their temporary feeding ground, is such as to threaten to some extent the existence of bush tracts in the

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course of the next century and bring these tracts into the condition of open veld. During my travels in East Africa I had ample opportunities of observing the gradual process of this reversion of dense forest to open bush or scrub, and finally from scrub areas to a treeless plain, primarily as a consequence of the destruction caused by large feeding herds of elephants, which are responsible for the first thinning-out process of the dense vegetation: this is followed in time by the passage of numerous herds of Masai cattle, grazing over the devastated areas recently vacated by the elephants. Fire is frequently the cause of the final disappearance of the bush which, as a matter of course, then reverts to veld. Although it may seem premature to suggest stringent measures for the preservation of large tracts of bush-country in Kenya Colony as permanent sanctuaries for the destructive elephant herds, it is as well to look ahead and select suitable areas where the soil is entirely unsuitable for the successful growing of crops, and therefore unlikely ever to be claimed for agriculture. The example of the Addo Bush in Cape Colony, which served for many years as an elephant reserve, and which it has recently been found necessary to clear of these animals, is sufficient to show the want of judgment with which the choice of the locality was originally made.

It is of course essential in the first place to consider the interests of the settler and to protect the farmers in the affected localities against depredations of elephants; to this end the herds in Kenya Colony might be induced to confine themselves within a suitable tract of country, of some thousands of square miles of bush with natural boundaries in the nature of desert or other unattractive margins. No matter what precautions

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are taken in this respect it will not be possible to prevent occasional herds from straying into the cultivated districts. Such incursions will, however, be less frequent and the damage so small as not to justify their complete extermination.

The capture and taming of the East African elephant is well worth considering, and it would be an excellent matter for the Government to devote adequate funds for carrying out exhaustive experiments in this direction.

Owing to the vast extent of the Colony, with its secular changes of environments and the diversity of the physical aspects of the country, it may be assumed that there are differences of what may be termed minor characters between the local races of the East African elephant. Such distinctions, although very slight, are likely to be more pronounced between specimens inhabiting the humid southern localities of the Colony and those roaming the desert-like regions of the north. How far these scattered representatives, which are classed as belonging to the same geographical race, may differ in their minor characters and habits can be gathered from photographs and descriptions in the latter part of this volume, in a chapter giving accounts of camera adventures with elephants in the arid Northern Frontier District.*

*The province known as the N.F.D. comprises the three districts on the northern Kenya borders, namely, Turkana on the West, Jubaland on the East, and between the two is situated the country stretching roughly from the Guaso Nyiro and the Lorian Swamp to Abyssinia.



A GALLOPING TROOP OF MASAI GIRAFFES

CHAPTER VI

CAMERA INCIDENTS WITH THE MASAI GIRAFFE

A STUDY OF THE ACTIONS OF A GIRAFFE IN ITS NATIVE FREEDOM

AS it is just possible that my accounts of camera experiences with the African elephant may become somewhat monotonous, I may perhaps be allowed to offer, by way of diversion, a camera adventure with the Masai giraffe.

Let me therefore conduct the reader, this time in a modern conveyance, a motor car, to the extensive grass plains of the great Masai Province, south of the Uganda Railway and somewhere between the Mau Escarpment and the Amala River, until we happen to come upon a troop of giraffes. The first glimpse of these peculiar inhabitants of the African veld is perhaps one of the most picturesque sights in nature. The uncommon height of the giraffe—the tallest of all mammals—and the peculiar shape of its body with the long, slender neck reaching at the young foliage of some wide-spreading acacia tree, as it moves staidly among the thinly scattered thorn verdure, is indeed a grand sight. The somewhat slouching, yet stately stride and the strange appearance of the animal's form, as it is sharply set off against the skyline on a

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clear morning, combine to leave an indelible impression upon the spectator's mind. The giraffe, in its native surroundings, is one of the most attractive and coveted of objects to the nature photographer and the camera sportsman alike. To photograph these long-sighted animals by stalking up to them in open bush country, which is their usual habitat, requires skilful tactics.

Among the earlier photographs some of those taken by Lord Delamere are of special interest—depicting Somali giraffes in mimosa covert in the Rendile district north of the Guaso Nyiro.

Enlargements of these are exhibited in the galleries of the Natural History Museum and bear testimony to the ability of the stalker. Dugmore, in his "Camera Adventures," has produced some fine pictures, taken with a telephoto camera, of groups of these animals as they stand about, or browse on the young tree-tops, in a setting of the park-like country typical of the eastern parts of the African continent.

The photographs that are here reproduced display galloping giraffes as they travel full tilt across the plains, and were taken from a pursuing car.

In taking these photographs my efforts were more especially directed towards obtaining some infallible photographic records of the actions of the galloping beasts which might throw definite light on the opinions held by sportsmen who are interested in the movements of game animals.

On reading the interesting accounts of our well-known African hunter, the late F. C. Selous, in his work "A Hunter's Wanderings in Africa,"* my attention was attracted by a

* Macmillan and Co., Fifth edition, 1907.

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chapter on giraffes, in which Selous gives a vivid account of how the African giraffe may be ridden into on horseback. His passage reads as follows (page 19):

"The giraffes, twenty in number, came up wind, looking splendid, with their tails twisted up over their backs like corkscrews, and we at once galloped obliquely towards them and managed to make up a good deal of ground. They have a most peculiar gait—a sort of gallop, their hind legs being straddled out at each step and coming (one on each side) in front of the forelegs. If you only look at their bodies and necks from behind, they appear to be sailing or gliding along without making any movement at all. They get over the ground, however, at a great rate, and it requires a good horse to run one down. . . ."

And again (page 20):

"At a hard gallop, however, they (the giraffes) can spin along for miles, and so we found to-day. After a time the giraffes separated, and suffice it to say that, at the end of an hour or so, I found myself lying on my back with my right leg nearly broken by coming violently in contact with the trunk of a tree. . . ."

Such incidents assuredly deserve illustrating by means of photographs. To attempt to portray the fleeing giraffe from horseback, galloping full tilt across the African veld, would undoubtedly be excellent sport, but it is obvious that no satisfactory camera snapshots can be obtained in this manner, and the alternative naturally entered my mind, namely, that of running up to the giraffe by more modern means. The Ford car proved to be of great assistance in this enterprise.

The accompanying series of giraffe photographs were

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consequently taken in Kenya Colony from the seat of a motor car, and the camera used happened to be an Ensign Popular Reflex, fitted with one of the fastest British lenses, namely, a Ross "Xpres" F/4.5 with 6 inch focus. The pursuit of the giraffe in this manner can only occur in suitable localities where the plains are quite open and more or less free from ant-heaps and burrows. Even so, this method presents sufficient risk to be fascinating to persons in search of exciting adventures, without the need of destroying the harmless creatures. The speed can at any time be observed on a speedometer, by which one is placed in a position to judge the velocity with which these interesting ruminants can travel. The single bull giraffe, figuring in one of the illustrations, was taken at a distance of about ten yards from the camera when the car caught up with the galloping animal travelling full tilt for all the discomfited individual was worth.

The speed at which the giraffe can travel when driven to its utmost varies between twenty-eight and thirty-two miles per hour for distances of a couple of miles or so, and is about as much as a car can perform at a breakneck speed for this kind of country. The speed of the giraffe varies, naturally, according to the age and condition of the animal. The main thing is to press the galloping animals to their utmost speed at first and the heavy bulls soon get blown and can then be ridden into.

It is curious to note that even when these queer ruminants travel at their utmost speed, as shown in the accompanying illustrations, they appear to be gliding along quite peacefully, and their actions give the appearance of being devoid of the least effort. The galloping animals utter no sound or cry



STUDY OF THE ACTIONS OF THE GIRAFFE IN FULL GALLOP

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during the pursuit and show no outward indication of fear or any other emotion. They are among the most peaceful and harmless of animals, and indeed deserve the strictest protection against extinction; a closer study of their placid and timid nature may perhaps reveal some quite interesting facts, but this it would only be possible to do with the help of concealed camera shelters cunningly erected round a water-hole. Such views of the giraffe can, as a matter of fact, be quite easily obtained by those who possess the necessary patience and are prepared to spend weeks on end in the vicinity of a water-hole.

E. Muybridge, in his classic work, "Animals in Motion," has made a careful analysis of the limb movements of a number of animals. With regard to the giraffe, he says on page 259 (4th edition, 1918):—

"Unfortunately no giraffe was available for the writer's investigation. The writer is inclined to believe that, when hard pressed, the rack of the giraffe, like that of the camel, will be exchanged for the transverse gallop."

By this suggestion, Muybridge appears to be inclined to ascribe to the giraffe the three distinct gaits of the camel, namely, the walk, the rack, and the gallop. As will be seen from the accompanying illustrations, he is correct in his surmise with regard to the fastest gait of the giraffe being a transverse gallop. The giraffe, however, in his untrammelled native freedom, has only two distinct gaits, the walk and the gallop, and not three, as in the case of the camel. The rack, in the sense of a gait between the walk and the gallop, is never adopted by the giraffe, and here it is perhaps necessary to give Muybridge's remarkably clear and comprehensive definition of the

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rack, which reads on page 133 of the work already quoted, as follows:—

“In the rack, the legs of the animal are used in the lateral pairs, instead of, as in the trot, diagonal pairs. The same uncertainty with regard to precedence of the fore or hind foot-impacts prevails in this gait, as in the trot; in contradistinction to the latter, priority is usually given in the rack to a hind foot, this being so immediately followed by its lateral fore that, practically, they may be said to swing simultaneously.”

The walking gait of the giraffe is rack-like in its actions, by which I mean that the legs on the same side of the animal's body are lifted practically simultaneously. This apparently simultaneous forward movement of the limbs on each side is particularly noticeable when giraffes are seen walking in single file across an open plain: owing to the peculiarity of the creature's general build, the observer obtains the impression of a slouching motion, which is nevertheless stately and dignified.

The moment the animals are alarmed they break from this rack-like walk into a lumbering gallop, which, by reason of their long legs and comparatively short body, results in the characteristic flourishing of the limbs so well exhibited in the accompanying photographs. The gallop of this curious animal is, in reality, much smoother than one would expect from the different phases shown in the illustrations, and the creature appears to be “sailing along,” as Selous aptly remarks in his interesting book, “A Hunter's Wanderings in Africa.”

The gallop of the giraffe is in its movements identical with that of a horse, and is termed, according to Muybridge, the



THE GALLOPING GIRAFFE. FIRST PHASE

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transverse gallop, in which the foot-impacts individually succeed one another as follows:—

Near hind, off hind, near fore, off fore, *or*, when the animal is leading with the opposite leg, off hind, near hind, off fore, near fore.

TEMPORARY MODIFICATIONS OF THE WALKING GAIT UNDER SPECIAL CIRCUMSTANCES

Occasionally, when giraffes are browsing on the foliage, lingering in a grove of scattered mimosa and reaching intermittently at a tempting young shoot, or when they are loitering round some water-hole, they may adopt modifications in gait to suit their very slow limb movements, according to the fashion of support required by the body in varying attitudes. The same may occasionally also be observed in our domestic cattle when grazing peacefully in the fields. The foot-impacts are sometimes found to succeed one another in the following manner:—

Near fore, off hind, off fore, near hind, or correspondingly, commencing with the off fore.

And also, at times, near fore, near hind, off fore, off hind, or again correspondingly, commencing with the off fore. These are all modifications of the slow walk of terrestrial quadrupeds under special conditions, and can hardly be counted as characteristic gaits.

* * * * *

In their unconfined state giraffes have only two distinct gaits, the rack-like walk, if we may conveniently call it so, and the transverse gallop: when hard pressed they will break immediately from one into the other.

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From the illustrations herewith the individual movements may be carefully followed and studied. With the intention of placing the actions more clearly before the reader, a series of three photographs is here reproduced, in enlarged form, of galloping animals, singled out from the various group pictures.

Beginning our study with the attitude in the first illustration, where the two hind feet are resting on the ground, we find that both fore feet are raised, with the near fore stretched forward and the off foreleg bent. The animal is apparently galloping with the near fore leading. The subsequent development of the movements immediately following this attitude consists evidently of placing the near fore on the ground with a forward stretching of the off fore; almost at the same time a lifting of the hind feet takes place in quick succession to one another, and in such a way as to appear, to the eye of the observer, a simultaneous action. The weight of the body is thrown forward and rests for a fraction of a second on one foreleg in the characteristic attitude which is depicted in the second illustration (this shows, however, a different member of the troop and one that is leading with the opposite fore to that of the animal in the first illustration). The fore feet touch the ground in rapid succession one after another, and the accompanying movement of the hind limbs consists of the gathering or drawing in of the hind legs, resulting, subsequently, in an attitude similar to the one shown in the third illustration which presents the same individual that is depicted in the first one.

That the individuals here shown were travelling at their utmost speed at the time the photographs were taken can be



THE GALLOPING GIRAFFE. SECOND PHASE

INCIDENTS WITH THE MASAI GIRAFFE

gathered from the fact that the exposures were made from a closely pursuing car. In one of the photographs a herd of terrified zebra may be seen in the background likewise galloping full tilt, but these we soon passed and left behind us.

The stride which the giraffe, with its stilty limbs and comparatively short body, employs in its gallop necessitates the straddling out of the hind legs, as Selous justly remarked, to such an extent as to allow the lower part of the hind legs, below the knee, to come slightly in front of the fore feet, when the hind limbs are fully drawn in and thrown forward.

This little peculiarity, although quite natural, may make the actions of the giraffe seen more complicated than they are in reality, and is, I presume, one of the reasons for a certain amount of the misapprehension prevailing among many people interested in the question.

In regard to distinctive marks the animals that figure in the accompanying illustrations belong to a local variety of the East African giraffe mentioned in Lydekker's "Game Animals of Africa" as the Kilimanjaro giraffe, and closely allied to *G. c. tippelskirchi* of Tanganyika Territory.

Owing to the proximity at which the animals have been photographed, the essential racial distinctions can to a certain degree be noted with comparative ease; the groups show, moreover, representatives of varying ages, from a calf to an adult cow giraffe and also a large bull of advanced age.

This variety is considered, from accounts of travellers, to be the most attractive in colouring among the many geographical races of the giraffe, and is mainly characterised by the fullness of its spotting. The markings of the female are perceptibly lighter in colour than those of the bull, and, again,

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the markings of the calf, brown patches on a tawny ground, are considerably brighter than those of the former. The old male possesses dark, chocolate-coloured blotches on a rufous ground, and the spots appeared almost black at the time the exposures were made.

From the illustrations it may be seen that both the sexes here carry only one pair of well-developed horns. These are covered with skin, somewhat similar to the antlers of a deer in velvet, but have a bony cap exposed at the extremity of the horns. The single frontal horn, and the pair of rudimentary posterior horns situated at the back of the skull, found in the five-horned Baringo giraffe (*G. c. rothschildi*), are not, as a rule, developed in this race. Young individuals bear tufts of hair in place of the paired horns.

The low, irregular boss, denoting the place of a frontal horn, is barely perceptible even in the large bulls appearing in the illustrations. From the skull of an old male giraffe, which I collected in the region of Lake Natron, also situated in the Masai country on the borders of Tanganyika Territory, it would seem that aged males of this variety do occasionally develop a pronounced median horn, some three inches in length.

The range of this Masai giraffe, otherwise known as the Kilimanjaro variety, is said to extend from Mount Kilimanjaro, and perhaps even further east, to the coast, and to Lake Victoria Nyanza on the west.

There is apparently a slight difference in the nature of the spots, as the individuals here depicted show a comparatively more regular shape of blotch with a less jagged contour than the spots usually observed on animals from the region of Mount Kilimanjaro. This fact, however, may only indicate



THE GALLOPING GIRAFFE. THIRD PHASE

INCIDENTS WITH THE MASAI GIRAFFE

the many slight variations which can occur in the same geographical race of giraffe in different localities.

The giraffe and the okapi are recorded as the sole living representatives of an African family of ruminants known as the *Giraffidæ*. The giraffes from different parts of Africa are known to show considerable variation in colour and markings, and in the degree of development of the frontal (median) horn and the rudimentary horns at the back extremity of the skull. The perfect development of the entire complement of horns appears to be found only in the Baringo race of giraffes, which possess, in the case of adult bulls, five distinct horns, consisting of one pronounced median or frontal horn in the middle of the forehead, one pair of well-developed main horns, and a pair of more or less rudimentary horns situated near the base of the posterior part of the skull, and hence known as the occipital horns. This particular variety occurs in the region between Lake Baringo, from which the name is derived, and Mount Elgon. Needless to say the giraffe is the tallest of all mammals, reaching a height of 18 feet to the top of the head; the record height is noted at a few inches more. It is curious to find that lateral hoofs are wanting in this animal. The feet produce a wide footprint on the ground, and the pressure-spread halves of the cloven hoof appear to come sharply together as the foot is lifted from the ground, sometimes with quite a distinct clicking noise such as may occasionally be heard on a quiet evening at the giraffe house in zoölogical gardens.

CHAPTER VII

CAMERA SPORT WITH BUFFALO AND RHINOCEROS

A SHORT SAFARI TO LAKE NATRON

WITH the intention of undertaking a long trip to the northern provinces of Kenya Colony, and of including in our projected safari the region of the Lorian Swamp and the borders of Somaliland, I landed at Mombasa on April 28th, 1922, after a pleasant nine days' sea voyage from Bombay.

The preparations had been entrusted to my friend, J. H. Barnes, who had, previous to my arrival, made the necessary arrangements for provisioning the safari, and procured donkeys and other means of transport. In view of the somewhat difficult journey we had before us through more or less desert country scantily inhabited by nomadic tribes, and being aware of the careful supervision necessary in all such transport matters, I decided to leave this question to a capable and experienced man. He was to start from Nairobi with the safari about the middle of May, and take it on to Archer's Post, our starting point, to which we would motor and join him by the first week in June. In the meantime we intended to em-



FACE TO FACE WITH THE AFRICAN BUFFALO

SPORT WITH BUFFALO AND RHINOCEROS

ploy the few weeks at our disposal by travelling south, to the borders of Tanganyika Territory and Lake Natron, with the object of trying our luck in securing photographs of buffalo and rhinoceros in their respective native haunts. Both were said to be fairly common in these regions at certain times of the year, but, as it happened, owing to the unusually wet weather that had set in some weeks before in the locality round Lake Natron, the grass, which I had expected to be parched and short, had grown to a considerable length in most parts along the Southern Guaso Nyiro, reaching in certain places to well above our waists. In the marshy depressions the coarse grass had grown to a height above our shoulders, and this considerably diminished the chances of obtaining successful results.

Starting from Nairobi by train, on the afternoon of May 4th, we reached Magadi Lake at noon on the 6th, after breaking our journey for a day at a small station named Kajiado. Here we secured the necessary "posho" (mealie rations) for our porters. On the evening of the 6th we moved towards a suitable camping ground on one of the southern promontories of the lake some two and a half miles from the works of the Magadi Soda Company.

The next morning, at the first streak of dawn, saw the safari on the move, making its way along the headland towards the southern extremity of the lake, where the water was shallow and offered a fairly convenient crossing. We reached the western shore by fording the muddy water and passing over the three promontories that jut into the soda-impregnated lake bed. These promontories were littered with jagged pieces of lava-rock, which made the going pretty awkward for some

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of our shoeless porters. The country traversed immediately beyond the lake consisted of broken undulating ground of distinctly volcanic origin, and the scanty parched grass and stunted thorn-trees were the best that this tract of thirsty wasteland was able to produce, even after the rain showers it had recently received.

As we passed within a few miles to the north of the Lenderut Hills, which slope towards the south end of the lake and die out in the narrow promontories just mentioned, the outlines of the mountains ahead of us, Shombole and Sambu, grew bolder with every league we advanced. The afternoon saw the safari traversing a grass plain, interspersed with clumps of so-called pepper-bush and young acacia, until we reached a cluster of fishermen's hovels, in the form of an abandoned Masai maniata or kraal, situated a few hundred yards from the banks of the Guaso Nyiro. This river takes its source outside the great Rift Valley, and after entering and running through part of the valley it discharges its waters finally into Lake Natron. Striking across a marshy plain we reached Mount Shombole in the evening, and pitched our tents on its northern slope. The camp overlooked the extensive floor of the Rift Valley with the tortuous course of the river winding across the dead-level plains below us.

On our way across the coarse grass of the alluvial flats we had struck abundant spoor of buffalo herds, intersecting the boggy depressions. Here the rush stood up far above our heads, making the most ideal cover and feeding ground for these beasts, and forming veritable strongholds such as they delight in, with the river winding through between banks fringed in places with dense reeds and an occasional fig tree.



LAKE MAGADI FROM ITS SOUTH-WESTERN EXTREMITY

SPORT WITH BUFFALO AND RHINOCEROS

The buffalo could spend weeks without once having to appear in the open. Every now and then a herd of the magnificent game could be located in the swamp by a flock of snow-white egrets or cow herons as they circled round the animals and settled on their broad and massive backs. The birds feed on the insects which their hosts disturb in their passage through the grass. On this marshy ground the buffalo are frequently seen with an egret or two perched on their dorsal ridge, as shown in one of the illustrations. The covert affords, at certain seasons, such effective concealment that, even from elevated points a couple of hundred feet on the slope of a hill, nothing may be espied for days, and the herds, when seen moving towards this cover, appear to vanish in the long grass as if engulfed in a chasm of verdure.

Part of the next day was spent in shifting our camp to a more favourable spot on the western slope of Mount Shombole, close to a fisherman's hovel some fifty feet or so above the level of a swamp, and overlooking the gap between Mount Shombole and the impressive Nguruman Range of hills; between these the river flows with many tortuous windings and forms the delta at the northern end of Lake Natron. In front of us, on the opposite side of the gap, there rises the dark and massive form of Mount Sambu with its base partly concealed by an island strewn with broken lava. This islet rises, as it were, from the swamp, and interrupts the view beyond of an extensive and salt-impregnated plain. Mount Sambu forms part of the imposing Nguruman Range, the western wall of the Rift Valley, with its lofty escarpments towards the north. On our left, beyond the marshy delta of the Southern Guaso Nyiro, extends the great soda lake Natron, in Tanganyika

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Territory, with the cone-shaped Mount Ngai* in the distance, covered with streaming, whitish lava ash, resembling sunlit snow. A legend is said to be current in connection with this volcanic mountain to which the Masai fantastically attribute the origin of their domestic cattle.

One of the accompanying photographs shows a headland at the base of Mount Shombole jutting out into the alluvial flat formed by the silt of the Guaso Nyiro in its flow into the lake. The accumulations of silt have caused the stream to subdivide, and the marshy plain is traversed by a number of twisting water channels, which stand out vividly from their surroundings, thanks to the darker green of the reeds and bordering bulrushes. As the channels are constantly silting up, new ones are, in course of time, cut through the soft earth, keeping the delta furnished with moisture, and thus it remains a permanent marsh; incidentally, it forms a most favourite haunt for the numerous buffaloes inhabiting this region. On the edge of the swamp, at the lake shore, innumerable water-birds, mostly flamingoes and pelicans, are seen feeding or roosting; here and there a family of marabout storks stand out, philosophical and conspicuous, among the lesser birds.

The accompanying illustration of flamingoes may convey some idea of the immense numbers in which these graceful, pink-feathered birds congregate when feeding. The photograph was taken near one of the silted channels of the Guaso Nyiro at its outlet into the soda lake, where the water is strongly brackish.

* This is an abbreviation for "Oldonjo-Lengai," which is the Masai name meaning "Mountain of the God."



LAKE SHORE AT NATRON WITH MOUNT SHOMBOLE IN THE BACKGROUND

SPORT WITH BUFFALO AND RHINOCEROS

Flamingoes are said to be birds intermediate between geese and storks or herons, and are invariably found in flocks. Their feet are webbed and they possess a slender neck and long, stilty legs. The bill is longer than the head, bending downwards from the middle, and provided on each side with sieve-like plates which act as strainers; the tongue is armed with strong, recurved spines. When feeding, as may be observed from the illustration, the long and slender neck is curved to such an extent that the head is upside down, for apparently in no other position could the straining plates be brought into operation. Their food, like that of ducks and geese, consists principally of worms, molluscs, crustaceans, and small fishes, and is taken by the simple means of filling the mouth with water, which then runs out through the comb-like plates of the bill, while the prey is retained. They do not appear to object to the salinity of the water and seem to feed in sweet, brackish, or soda-saturated water alike, often being found feeding along the moist soda-impregnated shores of the lakes in Kenya Colony and Tanganyika Territory. Flamingoes are good flyers, and excellent swimmers, too, though only in deep water, for their long limbs make it difficult for them to swim in shallows. The plumage of the birds seen in the accompanying illustration is white with a pinkish tinge. It is said that there are eight species of this bird, four of which are assigned to America and the remaining four range over the south of Europe during the summer months, and over Africa, India and Ceylon. Even where the birds are found in thousands on the African lakes, whether roosting or feeding, their noises are not in the least offensive, but have, on the contrary, a soothing effect on the interested spectator.

STALKING BIG GAME WITH A CAMERA

Standing motionless for a time, he may often find the birds approaching to within a couple of dozen yards as they feed solemnly along the lake shore.

One morning I was thus watching the birds, standing ankle deep in the brackish water, with my camera pitched on a tripod, and ready to seize any chance for a suitable exposure, when I detected the patter of hoofs on the beach behind me. Turning quietly in the direction of the sounds I saw a herd of wildebeest cantering some little distance along the shore towards the outlet channels of the river. The animals had evidently descended from their distant feeding grounds on the plains forming the low saddle between Mount Shombole and the Elashu Hills, and appeared to be very thirsty. They promptly lowered their heads and drank from the splashes of brackish water, paying at first no heed to my presence and presenting an opportunity of cautiously turning my camera in their direction. I secured the photograph which is here reproduced.

On another occasion I was given an opportunity of taking photographs of roosting pelicans: these appeared for the greater part of the day to remain stationary, either in deep water or standing in the shallows closely gathered together and keeping stoically aloof from the industrious and intently feeding flamingoes.

From the manner in which the pelicans keep apart from the busy flamingoes, and stand listlessly or float lazily, in one gregarious flock, packed closely together so that their white plumage is frequently intermingled with that of their neighbours, it is evident that they do most of their feeding at night or in the small hours before dawn. They seem to remain idle



A HEADLAND AT THE FOOT OF MOUNT SHOMBOLE

SPORT WITH BUFFALO AND RHINOCEROS

during the day, roosting and huddled together in the dense formation that is so typical of the birds.

The pelican is a common bird in East Africa and belongs to a family *Pelicanidæ*, which contains several species that are found in tropical and temperate regions. Pelicans are about the same size as swans, but appear larger owing to their loose plumage. They feed mainly on fish, frequenting coast, rivers and lakes, from which they rarely go very far. The long, broad, flattened bill, with its upper mandible hooked, carries beneath the lower jaw a capacious dilatable pouch; this serves as a receptacle for storing their food, which they either devour at leisure or use to feed their young. The colour of their plumage is nearly snow white with a slight flesh tint.

Photographing the African buffalo in its marshy haunts or in bush country is not an easy task. The most one can expect under such conditions is to snatch a glimpse of the raised head of one's quarry, the tips of the horns, or the beast's massive flank. When these animals have been in any way disturbed they usually remain in the shelter of the swamp and make their appearance in the open at night time. Buffaloes are not merely possessed of a keen scent but their eyesight is also excellent and their hearing acute. It is therefore only on rare occasions that a single individual can be surprised in its chosen covert and especially when it has become aware of pursuit.

When a herd of buffalo is met with in the open, it behooves the camera huntsman to make the best of such an opportunity by dealing with his chance in the way most suitable under the particular conditions. The best method of approach is often

STALKING BIG GAME WITH A CAMERA

the most direct one—to move up to the herd in full view of the loitering or feeding animals. It should be remembered that a crouching figure in the deep grass is especially likely to attract the hostile notice of the herd, while the likelihood of an attack on the intruder is remote when the members are gathered in the open. By moving up quietly and abstaining from sudden movements, it is sometimes possible to approach to within photographing distance before the younger members become uneasy and bring about a mild stampede of the whole herd. The older individuals will frequently stand gazing at the unusual apparition with their heads erect and horns laid back, and their curiosity may often induce them to walk towards the object of their attention with their moistened noses in the air sniffing for the scent of the intruder.

A herd seldom contains aggressive individuals, and in case of an alarm the bulls will as a rule meekly follow the example of the anxious cows and their perturbed young. It is, however, well to remember that once the buffalo is roused, or finds himself injured, he is without doubt the most determined and vindictive of the greater game animals, and is likely to do his utmost to drive an attack home, pursuing his antagonist to the bitter end with admirable pugnacity. The sport of following up wounded individuals in the extensive swamps remains always a hazardous performance, as the advantages under such conditions are mostly strongly in favour of the hunted quarry; for, besides their keen powers of smell, hearing and sight, these beasts possess a cunning which can all too easily be underestimated.

Having spent some days in search of prospective "sitters," we finally succeeded in approaching a herd of the magnifi-



FLOCKS OF FEEDING FLAMINGOES (TELEPHOTOGRAPH)

SPORT WITH BUFFALO AND RHINOCEROS

cent beasts well out on the plain, just beyond a belt of acacia trees. The wind blew in our favour, and concealed from them the exact nature of the intrusion, but the light of the sinking sun was troublesome; it shone from behind the loitering herd and obstructed the lens. The animals, which looked black and massive in the evening light, were accordingly reflected on the focussing glass in more or less silhouetted form. I carried the camera attached to a light tripod. Barnes, with a rifle, walked a pace in front, partly masking my apparatus, which I was ready to pitch into position the moment we came within reasonable range. Leaving the edge of the acacia grove, we traversed a stretch of bare ground between the herd and ourselves. Thus we moved quietly and obliquely across the open ground towards the game. Some of the animals were at first lying in front of the main body, peacefully chewing the cud and resembling a herd of domestic cattle; these stood up at our approach and many of the larger individuals stared sullenly at us from under their massive frontlets, with outstretched heads, but none of them showed any particular inquisitiveness. I had expected a few to walk up towards us in order to satisfy their curiosity, which in that case would have given me a more desirable composition. There was no such luck, however, and I was compelled to move within range, fearing all the while that they might stampede at any moment without giving me a chance for an exposure. The shutter was barely released when the herd cantered off a short distance away and again stood gazing at the unfamiliar apparition. Moving up in a seemingly unconcerned manner I succeeded in securing a further snapshot before they stampeded in earnest.

Observation of wild life will make one finally realise that

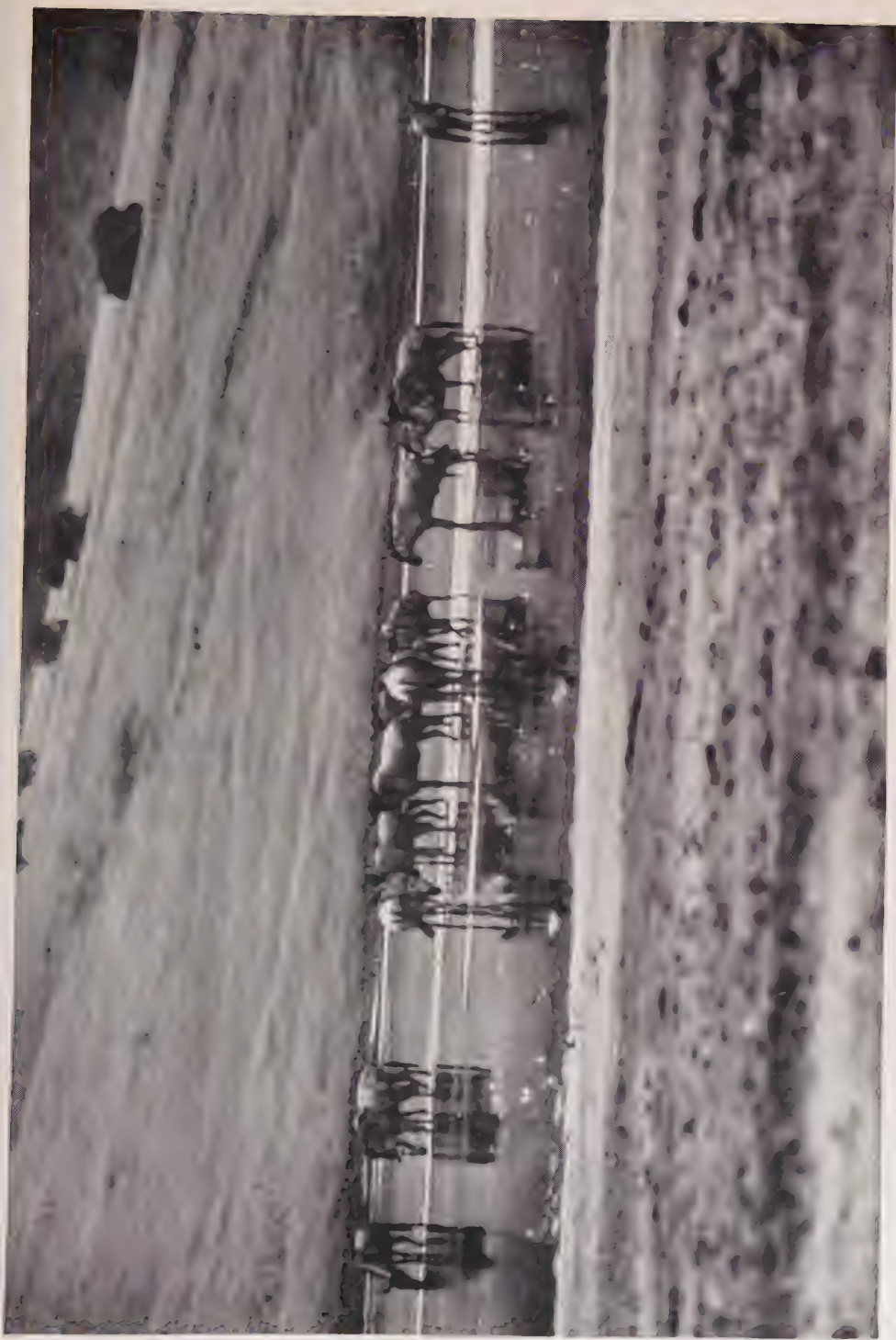
STALKING BIG GAME WITH A CAMERA

there is very little natural aggressiveness in the wild creatures. Even the buffalo will rarely come to the attack without some cause to justify his action. A solitary animal may occasionally display ferocity, perhaps because experience has taught him to hate mankind or he considers that the intruder is likely to be dangerous and disturb his peace.

The natural truculence that is so often attributed to these formidable-looking beasts is rarely met with, and the fierce inherent savagery which they are supposed to possess as part and parcel of their general disposition is often exaggerated in the description.

Familiarity with man, when a few of these animals are preserved on some settler's farm, may, of course, cause them to become a nuisance after a time and molest the casual unsuspecting traveller; but this I should say is possibly due to the beast's resentment at the frequent intrusion on the limited privacy of some favourite haunt. The steady persecution of game animals in general must to a certain degree have left an instinctive impression of suspicion in wild animals towards mankind; this feeling may also perhaps have been transmitted from one generation to another.

Nevertheless, it is common to find in the game reserves of East Africa that animals inhabiting the open ground are apt to become unusually confiding, as far as wild animals can be expected to be so towards mankind. The wildebeest, zebra and hartebeest, the most common inhabitants of the veld, will often allow the observer to approach them within fifty yards and even much less, but their instinctive apprehension generally causes them to become very restive at this range, and they may of a sudden decide to move off, lest closer proximity



A HERD OF WILDEBEEST QUENCHING THEIR THIRST (TELEPHOTOGRAPH)

SPORT WITH BUFFALO AND RHINOCEROS

should make it difficult for them to avoid harm in case of hostile intentions on the part of the intruder.

By patiently continuing to move about unobtrusively, remaining in full view of the creatures and keeping, at first, a reasonable distance, one finds that the game, after a time, becoming familiar with the sight of the strange object, may accept it as harmless, and so occasionally permit one to come within closer range.

* * * * *

The following interesting little adventure with the African buffalo is one that occurred to me in a place called Bolessa, in the Northern Frontier Province of Kenya Colony, and resulted in my securing a photograph of a singularly fine solitary bull in appropriate surroundings (see the first illustration of this chapter).

Early one morning a few of our boys reported some fresh spoor of a small herd of buffalo in the vicinity of the camp. With my camera we proceeded immediately to the spot where the tracks were abundant. The type of country in this locality may perhaps be best described as a plain covered with a parched and scraggy heather-like growth, some two feet in height, and studded with bright green and well-nigh impenetrable clumps of the common "suaki," or pepper bush as it is often called. The dung, with which here and there the intervening spaces between the bushes were littered, was sufficient indication that the herd had moved slowly, loitering and feeding among the heather-like plants.

On the off-chance of stumbling on to a laggard member of the herd, or a solitary bull, we moved cautiously among the clumps of bush, and on rounding one of these I obtained a

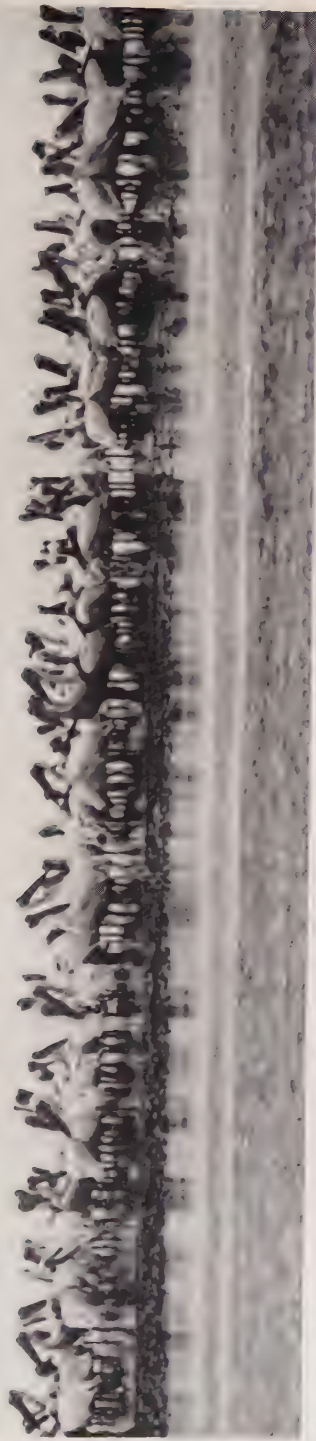
STALKING BIG GAME WITH A CAMERA

glimpse of a black and massive stern. The animal, in spite of our close proximity, was evidently far too intent on feeding to have become aware of our careful approach. It had its head well down among the herbage, and, standing obliquely, only showed a part of its right horn, which, from the momentary glance I obtained, appeared to be a good one. It remained for a while unsuspicious of our presence and gave me the necessary time to retire behind effective cover and prepare camera and tripod. There was no likelihood of the wind changing and the strong breeze was in my favour.

My preparations completed in feverish haste, I crept stealthily forward into the open—and had hardly succeeded in planting my light tripod on the uneven ground when the bull suddenly raised its head above the growth and stood alert as if listening intently. A curious instinct, so commonly observed in game animals, had warned it of impending danger. While it was feeding, one would have thought that the noise made by the munching of the tough food would have been sufficient to render the animal's sense of hearing oblivious of our stealthy approach.

The massive body swung suddenly round, displaying a superb head with a pair of remarkably fine and shapely horns, and the animal faced the camera behind which I stood nervously fumbling with the focussing knob before pressing the release. Here the animal is portrayed as it appeared at that moment, a picture of massive proportions and pugnacious strength, with the sheen of its black coat well set off by the colours of its environment.

With head raised, nose pointed forward and horns laid back in a defiant and challenging attitude, the buffalo gazed



ROOSTING PELICANS ON LAKE SHORE (TELEPHOTOGRAPH)

SPORT WITH BUFFALO AND RHINOCEROS

steadfastly at me, obviously mystified by the close proximity of such a strange apparition. The partly chewed heather in its mouth and the sprig on its frontlet are appropriate signs of an interrupted feed.

The action of the shutter made the wondering beast snort and move a few steps forward as if it could hardly trust its eyes. For a second time it halted, but now much nearer, and posed in a slightly altered attitude. The focussing became intensely exciting work, and they were speculative moments when I tore at a tab from the filmpack and pressed the release for this second exposure.

This time the rap of the shutter at such quarters proved too much for the buffalo: with a parting snort, it wheeled round and cantered out of sight, leaving me confident and satisfied that I had made a couple of successful exposures.

Both Barnes and myself felt not unnaturally relieved from the tension caused by this unique experience. Similar experiences have made me arrive at the conclusion that the African buffalo is seldom truculent in such circumstances. The formidable appearance of the beast at close quarters, with its impressive frontlet and sweeping horns, inspires an appreciation of the colossal strength which this animal undoubtedly possesses, and makes it appear the finest of all representatives of the bovine family.

RHINO ADVENTURES

Tramping across the valley of the Southern Guaso Nyiro from Mount Shombole towards the base of Mount Sambu, we espied a pair of rhinoceroses in the distance.

They were feeding some way from the swamp, on the edge

STALKING BIG GAME WITH A CAMERA

of a bare plain which extends south to the lake shore and west to the foot of Mount Sambu. The coarse grass, interspersed with reeds and plants, among which the two animals were leisurely feeding some little distance apart, was mostly about four feet in height, and grew in clumps. The two huge bodies, stained with the earth in which they must have been wallowing quite recently, had assumed a light grey hue, and lurched every now and then slowly forward through the parting vegetation.

On our approach one of these old-world beasts, the individual nearest to us, lifted its snout, and gradually raised its head above the grass, remaining motionless except for the twitching of its ears. It had evidently heard our approach, and standing stock still we awaited the moment when it would lower its head and continue feeding; with great care we then proceeded towards the vast bulk until the desired distance was reached for a satisfactory exposure. Wishing to make the best of the conditions, I was on this occasion using a portrait lens and tripod, and kept edging cautiously towards my prospective "sitter." Although we were on the right side of the wind the beast kept looking up uneasily at short intervals and evidently felt that everything was not quite as it should be. Finally, raising its head and swaying it in our direction, it could no longer fail to discern the intruders, in spite of its exceedingly bad sight. Gazing at us for a while with its small eyes twinkling, and its ears nervously twitching, a dull curiosity at last overcame the animal's uneasiness, and it decided to investigate the object of its inquisitiveness. It lumbered deliberately forward in our direction, stopping and raising its head every two or three steps, puzzled, and apparently



BUFFALO FEEDING IN SWAMP WITH EGRETS PERCHED ON THEIR BACKS



HERD OF BUFFALO IN THE OPEN AT SUNSET

SPORT WITH BUFFALO AND RHINOCEROS

straining its defective eyes to get us well in view. Its image grew on the focussing screen, and accurate adjustment of the camera became a difficult and trying matter. Prepared to sacrifice the apparatus, should the "sitter" become flurried at the last moment, I kept focussing until the body of the animal occupied a satisfactory proportion of the ground glass, and pressed the release at a moment when the beast was advancing towards us. The click of the shutter, curious to say, did not deter the old fellow from stepping forward on to the small piece of open ground at the end of which we were stationed with the camera poised on its light field tripod. The gun was held in readiness in case anything should go amiss.

A sudden yell from Barnes, however, accompanied with a few blasphemous terms of endearment, brought the beast out of the depths of its thoughts, and, throwing up its head, it stood amazed for a moment, wheeled round in what seemed at first rather a hesitating fashion, and trotted finally out on to the bare plain. It then halted for quite a minute, gazing in the direction of Barnes, which gave me ample time to train the lens to where the wondering animal stood; and so I got my second exposure. After trotting a few paces in a circle it again turned in his direction and stood as if not satisfied with its interrupted investigation. From the subsequent photograph it may be gathered that the good natured but inquisitive beast was on the verge of approaching for a second time, but, finally thinking better of it, it swung round and moved off briskly, closely followed by its mate. The latter at the outset had been a certain distance away, too far to permit me to include both of them in the picture.

It was a comical sight to see the pair of them trotting off

STALKING BIG GAME WITH A CAMERA

briskly, one behind the other, with their elevated heads, horns stuck in the air and tails stiff and erect, looking from a distance like a pair of large warthogs.

It is a well-known fact that these creatures are the most uncertain in their behaviour of all the larger game animals of the African continent. They are easily flurried, and their sudden confusion, probably resulting from the smallness of their intellects, causes them, when confronted with anything strange, to gather that they are in desperate straits and are called upon to make some demonstration in self-defence. It is perhaps largely due to this fact that they often become a nuisance to the traveller, and particularly so in bush country. The rhino is a formidable-looking beast, with a curious prehistoric air, and when it bears down on the intruder, to the accompaniment of snorts, the demonstration is at times decidedly disconcerting. It is as well that in such cases they are easily turned by a shot in the head or forepart of the body, as they are tough and will stand much punishment with the rifle before they succumb; one can never be quite sure of dropping the charging beast with anything but a well-placed shot.

Their awkward habit of standing motionless and alert, concealed in the scrub, listening intently to the approach of strange sounds, before they suddenly barge out from a most unexpected corner at a moment when the porters have almost stumbled on to them, is frequently conducive to mishaps by way of scattered loads and broken chopboxes. The boys naturally drop their burdens in their anxiety to keep clear of the clumsy and dull-witted animal, which is, in reality, only too anxious to make his frantic escape. Imagining himself surrounded by the line of porters he may at times repeat his rush



FACE TO FACE WITH RHINOCEROS BICORNIS

SPORT WITH BUFFALO AND RHINOCEROS

through the caravan with fatal result to his ignorant self. An old bull, when suddenly confronted with a human being at close quarters, particularly in bush country, may occasionally stand restive for a short while, snorting defiance before taking himself off at a trot. On detecting a strange object he is likely to trot up to it. A shout is usually sufficient to bring the beast to his senses, but on occasions, feeling himself confronted by a dangerous intruder, he instantly decides to rush forward, and changes his trot into a slashing gallop. A side-step in the nick of time is possible, but requires agility, and remains at all times a risky performance. When unwounded he will seldom return for a second attack, and this supports the belief that the demonstration on the part of the stupid animal has been prompted by its sudden confusion and ignorance as to how to deal with an embarrassing situation at a moment's notice.

The first photograph lacks the artistic setting, but may bring back to those who have at some time or other made the close acquaintance of the black rhino of East Africa a vivid recollection of the grotesque appearance of these antique creatures.

It may, perhaps, be of interest to the reader to hear of the following little experience with the East African rhinoceros, for incidents of this nature are bound to occur once and again to camera men who wish to gain at first hand an insight into the disposition and habits of those game animals which are generally classed as dangerous. Here, for instance, is an account of a typical incident with a rhino startled from his midday siesta.

We were travelling light from our base camp, and the few porters had just begun to pitch our 40 pound tent on a ledge

STALKING BIG GAME WITH A CAMERA

of the Lisudwa Hills, some eight miles from Lake Natron, when one of the boys informed us of the presence of a large bull rhinoceros. The peaceful animal had evidently picked out a suitable thorn tree on the broken hillside, some distance from the ledge, and had probably occupied the chosen spot between the hours of nine and ten, previous to our arrival. The hum of human voices had apparently been detected, and had caused the old beast to awaken from a heavy slumber. At all events, when I approached him from down hill over the broken ground, I obtained a glimpse of the massive head facing in the direction of the camp, and so giving me a side view, with the restive, twitching ears cocked and the two horns stuck in the air. From the outline of its back it appeared that he was seated on his hindquarters, his forelegs straight, in a manner often seen in the domestic pig as it squats on its haunches. I happened to be for the moment standing about a dozen yards below in a rock-strewn watercourse, where my movements were circumscribed on either side by patches of thorn-scrub, and I was about to prepare for an exposure when the beast suddenly stood up, wheeled round unexpectedly and, with alacrity, hurled down the hillside, choosing the watercourse as a line of escape. This gave me barely time to dispute my ground and turn the animal with a shot. With astonishing quickness he swerved at the impact of the bullet, and it was extraordinary to see with what agility and speed he went clattering down, over the broken ground, and galloped for more than a mile on the open plain below. We had an excellent view of the fleeing animal, and this incident gave us a singular opportunity of observing the gait of a rhinoceros at full gallop.



GAZING INTENTLY TOWARDS THE INTRUDERS



THE OLD-WORLD BEAST IS ABOUT TO INVESTIGATE

CHAPTER VIII

FURTHER EXPERIENCES WITH RHINOCEROS BICORNIS

IT is common knowledge among hunters and interested observers of animal life that it is practically impossible to foretell how the rhinoceros of East Africa will act if approached within close range.

Under such conditions he will prove to be undoubtedly the most erratic of all the larger game animals, whether he is met with on the turf-covered plains of the uplands, in bush or scrub country, or in the arid regions of the Northern Frontier District of the Colony.

In the previous chapter on "Camera Sport with Buffalo and Rhinoceros," some experiences with this old-world creature have already been described, from which it can be gathered that the East African rhinoceros (*Rhinoceros bicornis*) affords the camera sportsman a good deal of interest; at times, also, a considerable amount of excitement. It is a matter for regret to realize that this animal will in all likelihood be the first of the great African mammals to become extinct.

His erratic actions at the sight of mankind and his habitually fidgety demeanour in such circumstances are presumably due to excessively bad sight, which is, moreover, hampered, when the head is held in certain attitudes, by the presence of

STALKING BIG GAME WITH A CAMERA

the pair of median horns. In addition, the animal is known to be awkwardly stupid. His sense of hearing, on the other hand, is acute, and this fact is particularly noticeable and more pronounced when an alert individual is met with in bush country.

It is, I believe, because of these defects that the animal is apt to behave in such an uncertain and nervous manner in the presence of strange objects. He detects, for instance, an unusual sound and instinctively suspects danger. At the same time, his inadequate sight is unable to make out the cause of the disturbance, and this annoys him considerably; he becomes suddenly startled by the close proximity of the strange or dreaded object the moment it appears within his range of view, is thereby apt to become flurried and, in consequence, takes the initiative by attacking the intruder, or he blunders out of the way in the most unreasonable direction he could have chosen.

Normally he is a timid enough creature and prefers solitude. Human sounds will scare him away and the scent of man is generally equally effective, as the average rhino is quite aware that the human being is to be avoided; he seems to know him by his scent and noises, though rarely actually from sight.

The rhino is easily provoked at times when disturbed during a siesta, or when he is thirsty, and is unexpectedly startled by the appearance of moving objects close at hand while intently engaged in quenching his thirst or indulging in a bath.

In the arid regions of the Northern Frontier District I noticed that these quaint pachyderms were in the habit of travelling long distances from their water supply to their feed-



A RHINOCEROS DRINKING: IT PAUSES AFTER EACH LONG DRAUGHT

EXPERIENCES WITH RHINOCEROS

ing ground, which may sometimes be a matter of ten to fifteen miles away. They often come to drink in broad daylight, and the notion that they quench their thirst only in the evenings or at night is incorrect, unless they are apt to be disturbed in their chosen localities. The adjoining photograph, for instance, was taken shortly after noon, and my porters frequently came with reports of rhino coming to drink at the river side (Northern Guaso Nyiro) during hours between sunrise and sunset.

A little adventure, which incidentally gave me the opportunity of obtaining the next series of photographs depicting an attacking rhinoceros, will perhaps be of some interest to the reader.

While we were travelling in the Northern Frontier District our Boran guide informed us of a certain locality where rhino frequently came to drink at some salt water springs in the heat of the day.

The place in question possessed one of those typical sandy river beds bordered here and there with so-called dome palms. Hot springs welled up from below the outcrops of foliated rock, furnishing crystal-clear, but distinctly saline water, which formed a chain of small pools in the rocky parts of the otherwise dry watercourses.

Arrived at the spot after a hot and thirsty march through a parched scrub country, we took up a position some distance from the springs, and, after a few hours of impatience, spied a rhino making its way towards the water. It trotted for a while along the edge of the distant strip of thorn scrubs, and finally made its way directly across the open to the springs, changing its gait to a walk as it neared its destination. It ap-

STALKING BIG GAME WITH A CAMERA

peared most unwary and showed not the slightest hesitation in its actions. It had evidently travelled some distance and seemed very thirsty, for the moment it reached the first pool it walked right into the shallow water and promptly lowered its head, drinking steadily for not less than a couple of minutes at a time. This gave me an opportunity to secure the accompanying photograph of the drinking animal. The beast was fortunately not accompanied by tick-birds, otherwise the approach would have been a tedious business and the picture, in all probability, even more imperfect than it here appears.*

Having made what exposures I desired I withdrew a certain distance without the creature having the slightest suspicion of my presence, so intent was it on quenching its thirst.

Exchanging the long focus lens for a five-inch (13.5 cm.) Zeiss-Tessar, which I intended to employ for close and rapid work without the need of camera adjustments, I returned to my "sitter," accompanied by Barnes, who carried his rifle in case of a mishap.

Creeping up carefully and making use of every available cover in the shape of a tuft of grass and a small boulder here and there, we reached the bare space round the pool and found our rhino lying comfortably in the shallow water. We had barely straightened our backs and moved unobtrusively out

* The blemishes on several of the illustrations of this chapter are due to the following reason. Excessive heat prevalent in the locality where these photographs were taken had affected the sensitive emulsion of the films in the pack, and the violent rubbing of one film over the softened emulsion of the next in the pack as they were being changed for the various exposures caused horizontal scratches on their surface. Neglect to develop the films in cooled water resulted in the emulsion breaking up into a multitude of small cracks. Rather than try to have these blemishes removed by retouching, I have chosen to have the reproductions made in accordance with the original negatives.



BEARING DOWN ON THE UNWELCOME INTRUDERS

EXPERIENCES WITH RHINOCEROS

into the open, to within thirty yards or so from the beast, when, with ears twitching, it raised its head, stood up, and turned sharply in our direction where we stood exposed and in full view. As it seemed, in less than a second the animal galloped towards us and the shutter was released, thus giving the first of the series of three photographs. The rhinoceros is here seen bearing straight down on the intruders with its ears pricked forward—but the head is not as yet lowered for the thrust.

The removal of a tab of my film pack and the resetting of the shutter were matters of a second or two, and jumping aside with what agility I could muster and pointing the camera in the direction of the galloping beast, I pressed the release more or less at random. I heard my friend discharge his first barrel. The second exposure showed the irritated animal in its stride, in the attitude in which it was rushing blindly at the intended victim.

Resetting the shutter and wrenching another tab off the pack I pressed the release for a third time, and was apparently in time to snap the rhinoceros a short moment after it had received the bullet. From Barnes' account after the incident it would seem that at his shot the beast, after passing between us, had swerved in his direction and slackened its gallop to a canter. The animal is depicted in the illustration with its horns lowered, and must have been close upon my companion at the moment I made this exposure and he felt compelled to fire his second barrel. The effect of this second shot was curious, as the rhinoceros spun round and sank on its forelegs in the attitude which is caught in the illustration.

As a rule, if a shout has proved ineffective in stopping a

STALKING BIG GAME WITH A CAMERA

rhinoceros, it may be easily turned by a head shot. Once it is in rapid movement shouting will naturally be of no avail. Even then, as long as the animal has not yet lowered its head it will often wheel round and take itself off at the last moment. But once the creature has dipped its head, in full stride, it apparently sees and hears nothing more and rushes blindly at its enemy. This particular individual showed itself an uncommonly determined beast, but at the same time there was doubtless ample provocation on our part, considering the circumstances of our intrusion.

I have little doubt that this same animal would have moved away from our proximity had it previously winded us and had time enough to retire without undue haste. This sudden appearance of two strange, moving objects at such close quarters might have flurried any other placid beast as well as the blundering rhinoceros. But even under such trying conditions most individuals will show their timidity by instinctive flight. Others, of a bolder or more inquisitive disposition, may perhaps stand for a time and gaze steadfastly at the object that excites their curiosity. In the incident just recounted the black rhinoceros attacked by sight and not by scent, and I have had occasion to observe this in the course of other experiences with this species.

Generally, the rhinoceros, like all animals, prefers to move off on winding a human being, and particularly so when it scents a white man, unless, of course, it is persistently thwarted from satisfying its natural wants. In the case of its access to a water pool being prevented by the constant presence of cattle and herdsmen in drought-stricken areas, an occasional individual may become decidedly savage.



THE BULLET MADE THE ANIMAL SWERVE TOWARDS MY COMPANION, WHO FIRED HIS SECOND BARREL

EXPERIENCES WITH RHINOCEROS

I gathered from transport riders in the Northern Frontier District that cases had occurred when their oxen were driven away from water holes, and in two instances a Dutch transport rider, in the service of the King's African Rifles, had one of his team of oxen gored by a truculent rhinoceros when his animals were led to drink at some water hole near Lasamis, a locality situated on the track from Archer's Post to Marsabit. Reports of similar incidents from Boran and Somali cattle owners in the region of the Lorian were current regarding the savage behaviour of elephants during severe droughts, and when the water of the Guaso Nyiro has failed them.

A cow rhino in company of a calf is at all times likely to be vicious, frequently to such an extent that even the hapless male parent is not permitted to come too close to her offspring without incurring the displeasure of the female.

Stalking and photographing the rhinoceros as it is often met with on the turf-covered and shadeless plains of the uplands of Kenya Colony can hardly be called a difficult matter, as the animal under these conditions is so very easy to approach. It is, however, a different matter in bush or scrub country, when the creature is apt to show an alert and suspicious disposition.

Having struck the fresh spoor of a rhino, or perhaps that of a family of rhino, the camera sportsman follows it with infinite caution until, when his luck is in, he hears the distant sound of a tick-bird, which gives him timely notice of the presence of his intended subject. This would allow of the necessary preparations being made at ease, while his companion gets his gun ready in case of emergency.

Often, though, the sudden twitter of a few alarmed rhi-

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noceros-birds is heard close at hand and their snorting host may then be expected to emerge suddenly from the brushwood or scrub, with raised head, ears pricked, and horns stuck perkily in the air, to investigate what all the commotion is about.

A more embarrassing encounter, in the absence of birds, is perhaps heralded by an unexpected crashing in the bush followed instantly by the appearance at close quarters of a snorting rhino blundering past one in full gallop.

The accompanying illustration depicts an interesting moment where an individual is shown with lowered horn as it was snapped in the act of rushing forward at my companion.

It had apparently been standing motionless and alert for a while among the brushwood, listening intently, until it became discomfited and flurried by our close proximity, and decided to attack the intruders. The surroundings give one some idea of the arid locality in which these animals may occur, bare and desolate, with here and there a kopje. The brushwood and parched thorn-scrub is typical of the "Nyika" of the northern regions of Kenya Colony.

Considering that the foregoing series of photographs are the impressions of the incident faithfully recorded by the camera, one can hardly abstain from remarking the surprising difference between reality and imagination.

Most of us are familiar with the wonderful drawings and engravings that are found in the old books on sport and hunting: in these pictures the artists' imagination has added considerably to the effect of the composition, but necessarily at the expense of reality. This is, however, in many ways explicable as even the eye of the sportsman is apt, at such moments of intense excitement, to picture in his mind an



THE SECOND BALL MAKES IT SPIN ROUND AND COLLAPSE ON ITS FORELEGS

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exaggerated image of the rapidly advancing animal. Briefly, the excitement and discomfort in the circumstances are factors to be taken into consideration, as they are capable of affecting the spectator's judgment of the animal's proportions, and produce an idea of a most savage and gigantic creature bounding forward to affect his destruction.

The camera, however, looks upon it from a different and cooler point of view and gives a record devoid of sentiment and colouring.

Photographs depicting such exciting incidents can, therefore, hardly ever convey the same impression as the pictures of an artist representing the same subject. By a proper choice of lenses a slight distortion in the perspective of the subject can be almost entirely avoided.

The foregoing photographs of the charging rhinoceros give one an insight into the nature of the animal's movements while galloping towards an antagonist. Remembering the ponderous weight of the beast and the remarkable speed (roughly about a dozen yards a second) with which it bears down on the intruder, it may be imagined with what force the anterior horn can be driven home.

In Muybridge's admirable work on "Animals in Motion" will be found the following paragraph, page 258 (fourth edition, 1918):

"It is very desirable that some African traveller should succeed in obtaining photographs of the rhinoceros under full speed, as, like the hippopotamus, it will perhaps in a few more years be exterminated. A single lateral exposure will, under favourable conditions, be quite sufficient to determine the character of the movement."

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The illustrations which are here given of the rhinoceros in full stride show, by comparison with Muybridge's series of photos of the galloping horse, the nature of the actions of the old-world beast.

No. 12 of his Series 50 gives an identical phase in the stride.

I have on several occasions had the opportunity of observing the rhino's fastest movements and found its footfalls similar to those of the horse in the gait which Muybridge terms the transverse gallop.

The observations of the writer are concerned with the black or prehensile-lipped rhinoceros of East Africa (*Rhinoceros bicornis*) and have not extended to the so-called square-lipped, or white rhinoceros, of the Lado (*Rhinoceros simus*). The latter is, from all accounts, a larger and less active beast than the black species of East Africa. There is, however, judging by the animal's general build, no reason to suspect the least difference in their respective gaits, but I should imagine that the white rhino, by reason of its slow and sluggish disposition and seemingly excessive bulk, would be contented with a canter as its fastest gait, and show a great disinclination to gallop.

Considering the proportions of even the black rhinoceros it is astounding how active the beast may show itself in case of need: driven to its utmost speed it can possibly travel at a rate exceeding 20 miles an hour.* It takes but a little time

* In this connection it is interesting to note that Sir Samuel Baker mentioned, in his "Nile Tributaries of Abyssinia," that a fleet Arab horse is needed to catch up with a galloping rhinoceros in open country. The accounts of his chase on horseback after rhinoceroses are most instructive for forming an idea of the animal's fastest speed.

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for a rhino to get into full stride, and even in its gallop it is surprising to notice how quickly and suddenly the animal can swerve aside at the sound of a shot.

Normally it holds its head in the position depicted in the first illustration of this chapter. Curiosity will cause it to elevate its head in the manner which is so well shown in the last illustration of the previous chapter on "Camera Sport with Buffalo and Rhinoceros." In this photograph an individual is seen facing the object of its suspicions, with its head in the attitude it assumes while conducting investigations at close quarters, the horns sticking up in the air. I therefore conclude that in this position the beast can make the best use of its deficient sight. The commencement of the gallop towards the unwelcome intruder is apparently carried out with the head slightly raised above the normal position, and the ears pricked up and alert, as shown in the second illustration of this chapter; the moment the beast is at close quarters, within, say, a few paces from its antagonist, the head is evidently lowered and it rushes blindly forward with unrelaxed speed, with the anterior horn poised for the impact. This change in the attitude of the head is a useful indication for the sportsman and should be responded to with a timely side jump. Needless to say, it is always an unpleasant performance and is better suited to the trained agility of a *torero*.

From the foregoing photographs it is curious to note how slender the animal's legs appear when seen laterally and compared with the bulk of its body. The length of the thigh to the hock has probably much to do with its capacity for rapid motion, without giving the appearance of unwieldiness in the animal's movements.

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The African rhinoceros has in its untrammelled state three distinct gaits. The first is the walk, which, as in nearly all quadrupeds, has the following successive foot-impacts: the stride is begun with, let us say, the near (left) hind leg, the next foot to touch the ground is the near fore, then follow successively the off (right) hind and the off fore.

The second gait is the trot, in which each pair of diagonal feet, let us say, the near fore and off hind, or off fore and near hind, are alternately lifted more or less simultaneously.

The third gait is the gallop, which is the movement that most concerns us here.

Muybridge distinguishes two distinctly different types of gallop in quadrupeds, namely, the one which he terms the rotatory, and the other the so-called transverse gallop: the latter is the most common among four-footed animals, and evidently also includes that of the rhinoceros. Commencing with, for instance, the near hind, the foot-falls or foot-impacts succeed one another as follows:—

Near hind, off hind, near fore, off fore; or, off hind, near hind, off fore, near fore, depending on whether the animal is leading with the near or off fore.

Muybridge's rotatory gallop has the foot-impacts succeeding one another in rotary fashion in the following sequence: near hind, off hind, off fore, near fore, or, in the same sequence, commencing with the off hind in rotary fashion. Unlike the elephant, the rhinoceros can travel quite well on three legs in the event of one being severely injured.

The front horn of the rhinoceros, which consists of a mass of closely packed fibres growing from the skin and resting with its slightly hollow base on a shallow prominence of the



RUSHING FORWARD WITH LOWERED HEAD

EXPERIENCES WITH RHINOCEROS

massive skull, is a formidable arm of offence. The head of the beast, supported by the powerful muscular neck on the vast bulk of the animal's body, can, when needed, be lowered for an attack to such an extent that the snout remains poised a few inches above the ground. Such a low poise of the head is on occasions observed when the animal is charging, in the comical way these bad-sighted and crusty customers sometimes do at a small object on the ground that, for some reason or other, has disturbed their mind.

On account of its proportionally shorter neck the black rhino does not normally hold its nose as low to the ground as its bulkier and more sluggish cousin, the white rhinoceros. The latter, it is said, is able to lower the head to such an extent that the front horn remains almost parallel with the ground, offering, incidentally, a better target for an effective shot in the head in case of a charge.

The forward rush of the black rhino, when at close quarters with a human adversary, is evidently carried out with the head poised in the attitude depicted in the second illustration of this chapter. It will be seen that, at close range, the charging animal has its ears somewhat drawn back, in the same way as a vicious horse in a savage mood.

The astonishing speed of the animal, with its considerable weight, adds immensely to the momentum with which the horn can be driven into the body of its antagonist, and the following little anecdote will give some idea of the power with which this formidable means of aggression can be wielded in the event of the rhinoceros being so minded.

In the country between the Amala and Mogor Rivers we were one day following the track of what appeared to be a

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large rhinoceros. The Ndorobo tracker after some spooring led us finally into a strip of dense bush, which extended over a few hundred acres along a tortuous course of a partly dried rivulet bed; this, now a mere chain of pools, served as a drinking place for the numerous herds of antelope inhabiting the adjacent plains. Cautious stalking brought us close to our quarry, which, from its general attitude and its nervously twitching ears, appeared to be very much on the alert. Obtaining a momentary glimpse of the substantial base of the front horn, I was satisfied that this was the owner of the big footprints we had followed, and secured it with a shot behind the shoulder. This I much regretted afterwards, seeing that it was an aged cow rhino. The mistake in sex was comprehensible in the circumstances, for the female African rhinoceros has almost invariably a notably thinner horn than the male, though occasionally it may be longer, while the base is generally proportionately smaller in circumference; such, however, was not the case in this particular instance. Moreover, she was unfortunately accompanied by a calf, which was presumably standing close by, effectively concealed among the creeper-like stems of the bush. Immediately after the shot was fired the young one showed itself beside the body of its parent. Moving a few steps towards my quarry, I was suddenly startled by a terrific crashing through the bush, and the male rhinoceros appeared on the scene at a fast gallop, giving me barely time to retreat a few paces and watch further developments: he must have been browsing some distance apart from his mate and remained for a while motionless and alert on hearing the report of the rifle. Standing still for a moment beside the carcase of his mate he lowered his head and prodded at her with a



AN ASSEMBLY OF RHINOCEROS BIRDS FLITTING ABOUT THE BULKY FLANK OF THEIR HOST

EXPERIENCES WITH RHINOCEROS

resounding thud. This was repeated several times with increasing vigour until frenzy seemed to overcome the desperate beast and retreating a pace or two he charged the carcase wildly again and again in rapid succession and finally rolled the heavy body over, stepping over it through the surprising momentum of his rush. In the meanwhile the orphaned calf, alarmed by the fury of its male parent, had made itself scarce. This incident indicates the strength which a rhinoceros can display when thoroughly roused and goaded to frenzy. The weight of the carcase must have been well over a ton, and it is perhaps worth recording that the tough hide of the dead female was dented in places but not pierced, in spite of the terrific blows to which it had been subjected.

An indication of the difficulty which these animals have in gaining a clear sight of objects may be found in the action of the head, which they repeatedly raise and dip in a comical and puzzled fashion, when they are approached in the bush, as they stand peering in the direction from which the intruder is coming towards them. Their uneasy cogitation often expresses itself in the way they sway their head and the forepart of the body from side to side, while standing on one forefoot and then on the other alternately. At such a moment a sudden decision may be expected, the tail goes up, the animal either rushes forward at the intruder or—turns and trots off.

The rhinoceros usually seeks a place for his siesta between the hours of nine and ten in the morning, and resumes activities about three in the afternoon. In places where they are rarely startled or molested they will lie down on their side and sink into a deep slumber without further preliminaries; where they have been recently disturbed they are apt to remain rest-

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less and apprehensive for several days, and at such times they are found to become fastidious in the choice of a resting-place. I have had occasion to watch these creatures for hours from a ledge on the Lisudwa Hills, from which a splendid bird's-eye view was obtained of the bush country immediately below. One individual, for instance, stood about in a restive condition for over an hour before it finally squatted on its hindquarters. In this attitude it sat for quite a considerable time, in an uncertain and disturbed frame of mind, judging by the manner in which it incessantly kept moving its head, now in this direction now in another, listening intently all the while with its mobile ears twitching and alert. It had previously been startled by our appearance in the neighbourhood on two consecutive days. The moment the animal's perturbed senses detected the shouts of our boys whom we had sent down for water, it made no further bones about it, but promptly stood up and trotted briskly off. It was evident from the suddenness of its actions that the keenly alert animal had heard the sound of human voices at a distance of roughly three hundred yards, showing how acute their hearing can be once their suspicions have been aroused.

On the other hand, by moving slowly and cautiously in open country where the rhino is usually much less suspicious and wary, it may often be approached to within easy photographing distance without even causing alarm to the tick-birds that may happen to be on the animal's body at the time. In fact I have, by careful movements, taking a few steps at favourable intervals and standing stock-still alternately, secured snapshots of rhino, when the hearing of the particular individual had already conveyed to it a suspicion of my ap-



FACING THE CAMERA PREVIOUS TO A HURRIED DEPARTURE

EXPERIENCES WITH RHINOCEROS

proach, and it had become fidgety before the unwary birds were in any way disturbed.

One of the photographs depicts an assembly of five of these rhinoceros birds pecking away energetically at the thick hide of their massive host, flitting about the animal's flank and back and industriously searching for vermin on all parts of its huge body.

The next illustration shows the same individual directly facing the camera after it had pivoted on the mound on which it stood, now this way and now that way, in an endeavour to locate the exact origin of the intermittent noises caused by the rap of the camera shutter at each exposure. The moment it detected my presence it wheeled round unceremoniously with its stiffened tail in the air and its head elevated in a comical and perky fashion, and thus it trotted off briskly from the unpleasant neighbourhood.

CHAPTER IX

CAMERA SPORT WITH THE HIPPOPOTAMUS

THE following series of photographs, illustrating some of the terrestrial habits of the hippopotamus in its native environment, were taken in the Northern Frontier Province of Kenya Colony, under somewhat unusual conditions. It is by no means common to find these denizens of the African rivers in broad daylight, loitering or resting some distance from their water sanctuaries.

On the particular occasion we had been marching since daybreak along the margin of the Northern Guaso Nyiro when, at about nine, we decided to cross the river at a point where the fringes of "dome" palms on either side of the stream gradually gave way to strips of thorny mimosas. These latter now formed the vegetation along the tortuous course of the river, extending on both sides to a depth of roughly a quarter of a mile from the banks.

Beyond this all was waterless, desert-like country, exposed to the scorching heat of the tropical sun, and only relieved here and there by a patch of parched thorn-scrub, looking dust-covered and grey in the distance.

On approaching the point where we intended to cross



HIPPOPOTAMI UNDECIDED IN WHICH DIRECTION TO ESCAPE

CAMERA SPORT WITH THE HIPPOPOTAMUS

the stream, our Boran guide, who was walking a few dozen paces ahead of the safari, was suddenly startled by the loud snorts and the headlong rush of a surprised troop of hippopotami: some of the members had evidently been sunning themselves among the scattered clumps of a thorny evergreen shrub common to these regions.

Disturbed from their quiet rest by our sudden appearance on the scene, the startled members of the troop rushed in a body towards the edge of the bank and took a leap into the water, which, as we found subsequently, was some six feet below. The stampede was accompanied by resounding flops as the bulky bodies plunged one after another, and landed in a pool. The less terrified individuals found their way singly round the bushes, on to the well-trodden paths leading down to the water's edge, and slid into their watery retreat with hardly a splash.

On reaching the ledge of a perpendicular bank caused by the erosion in a hairpin bend, I was agreeably surprised to find the river very shallow owing to the long drought which had from all accounts continued far beyond the normal season. The bed of the river was, in many places, dry, or contained not more than some six inches of water: at the very spot we struck, more by luck than by wisdom, there was a fair sized pool about forty feet across, formed by a depression in the river bed. As we found later, this pool constituted the home of a large family of hippopotami of varying ages and sex, numbering not fewer than nine members.

The pool appeared to be the only safe abode and effective cover for these animals for many miles along the stream: it was barely deep enough for the whole community to conceal it-

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self from our curiosity when they remained all pressed and huddled together in the centre portion of its slushy bed. Thus they stayed as long as they saw or suspected our presence in the vicinity, protruding their monstrous square snouts just above the surface of the water to breathe at varying intervals.

I promptly got my camera in readiness, but remained for many hours disappointed, seeing nothing but the tips of their big snouts with the pairs of circular nostrils every time they popped up to breathe: the action was invariably accompanied by a sudden blast, as the large quantity of expended air was ejected from their powerful lungs, only to be quickly succeeded by the intake of a fresh quantity with a sound resembling that of an air-pump. The rapid intake of a large volume of air through the comparatively small nostrils as the animal refills its enormous lungs causes the action, at times, to be accompanied by a wheezing noise. Being thoroughly disturbed, the wary beasts, throughout the course of the day, exposed little more than their noses above the surface of the water, and the merry blowing sounds continued all through my hours of waiting on the edge of the bank. At most I had to content myself with the protrusion of a pair of alert eyes staring at the intruder, or, at long intervals, with a momentary glance of the upper part of a massive head peeping a few inches above the water level.

It would have been an easy matter for a patient observer to have secured a number of photographs of these amphibious mammals with their bodies showing partly out of the water, by the help of a snug camera-shelter, or blind, cunningly erected in a suitable place along the bank of the stream. I preferred, however, to camp some distance from the pool, lower down the



THREE HIPPOPOTAMI TROTting PAST A BUSH

CAMERA SPORT WITH THE HIPPOPOTAMUS

river course, well to leeward of any likely breeze, and await an opportunity to secure photos of the animals as they wandered about along the margin of the river, or fed on the grass near the edges of the banks.

The opportunities that offered themselves in the course of the next few days were better than I could have dreamt of.

During periodic visits to the pool in the early hours of the day I was occasionally rewarded by a snapshot or two as I approached the peaceful beasts unconsciously feeding or moving leisurely among the scattered bushes. Sometimes they were lying on the bare sandy soil of the intervening spaces between clumps of impenetrable vegetation, or trotting towards their watery refuge on being suddenly startled.

On one of my visits I managed to reach the bank unobserved and unsuspected by carefully skirting a welcome bush by way of cover, and in this way secured a pair of interesting snapshots of a young hippopotamus. The first of the next two illustrations depicts a baby hippo lying fast asleep on the edge of the pool with its stumpy little forelegs well tucked in and serving as a convenient pillow for its weary head; it lay fully exposed to the scorching sunrays.

The moment it detected the rap of the camera-shutter it looked up in rather a sheepish fashion, and, discovering my presence, trotted in a bee-line towards the pool. The second exposure caught the little creature during its trot into its natural refuge.

The afternoon of the same day gave me an opportunity to snap a large bull hippo the instant it was startled from its feed by my close proximity. Here the beast is seen at the moment it had raised its head and was standing alert, a second or so

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before it turned and moved hurriedly back into the bush: a few minutes later it was seen emerging from the verdure some distance away and descending to the edge of the pool. On land these placid animals seem to be the least aggressive members of the African pachyderms, and their occasional demonstrations of annoyance at the close intrusion of human beings can hardly be interpreted as determined attacks.

The hippopotamus feeds essentially on rush and swamp grasses of various kinds. He naturally prefers the succulent herbage to dry grass, and remains by predilection feeding among rank vegetation along the river-side, where the grass often shows the characteristic signs of having been uprooted by the animal's harrow-like teeth. From their night tracks, especially along the small rivers in drought-stricken areas, it is evident that they will travel for miles along the banks and sometimes also considerable distances from water when attracted by, or in search of good pasturage, returning to the vicinity of their abode in the early hours of the morning. In such drought-stricken regions, where the beds of the streams are apt to dry up, with the exception of a few shallow pools at vast distances apart, these otherwise aquatic creatures show that they can live for many a day, and frequently for weeks on end, in the bush. It is in such localities, incidentally, that one notices how readily these animals can abandon their naturally aquatic habits, and adapt themselves to a mode of living characteristic of purely terrestrial mammals.

In this particular instance it was interesting to observe how, as the pool reduced in size and became ultimately too shallow and polluted, the creatures showed increased disinclination to avail themselves of the water as sanctuary. On



BABY HIPPO BASKING ON THE SUNNY BANK OF A POOL

CAMERA SPORT WITH THE HIPPOPOTAMUS

the other hand the desert-like nature of the locality beyond the narrow margin of the dry river bed offered no suitable cover. Thus they were compelled to hug the strip of vegetation along the banks of the river course, remained among the bushes during the day, and wandered long distances in the night.

Here, then, was an excellent example of a case where a drought brought the animals face to face with the fundamental alternatives for their future—they were compelled either to migrate from their favourite abode and seek normal conditions of life or to accept the adverse circumstances and adapt themselves to completely terrestrial habits, at least for the duration of the seasonal droughts. It struck me as curious that the first, and in the circumstances seemingly the most natural course had not already been adopted, since there was no barrier or impediment to prevent this troop of hippopotami from choosing a new and more favourable home, either higher up the river or some forty miles further down in the swamps at Lorian.

Habit and attachment to their familiar abode, as is occasionally noticed among other wild animals, were so great that the individuals preferred to make shift with the altered circumstances of their surroundings and endure the privations entailed by them rather than migrate. Such great reluctance and consequent delay in parting with a favourite dwelling place may well be the cause of many an animal perishing during a long spell of drought.

An interesting feature may be discerned in the appearance of the individuals that are here portrayed as compared with occasional specimens in zoölogical gardens, namely in the

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less ungainly development of the body in proportion to the limbs; the animals showed an activity lacking in most of the captive specimens found in menageries. In arid regions such as here described singular opportunities occur to the photographer of meeting with these animals as they lie basking in the open patches amid the bush clumps. Thus surprised, the creatures at once seek cover among the vegetation, where they are apt to stand stock still with their heads thrust between the foliage. Their small eyes peer at the intruder through the tangled branches and leaves. Though ludicrously exposed, their motive is evidently to emulate the proverbial ostrich.

Their behaviour is, however, very different when they are in close proximity to a place with sufficient depth of water to afford effective cover. In this case the startled animals will invariably make a headlong rush to reach the element in which they feel themselves safest from danger. They may at such times barge right into any obstruction that happens to be in their line of retreat and it is on such occasions only that an observer might meet with injury.

It is surprising to see what little depth of water is sufficient to conceal their large bodies: they appear to flatten themselves out in emergency to such an extent that two feet of water often suffice for effective concealment.

Their agility, too, is surprising in case of emergency, and specially noticeable in the speedy way they can clamber up the steep banks and descend to the water's edge without checking their rush or showing any sign of unwieldiness in their movements.

The hippopotamus, on terra firma, appears timid and disinclined to cause deliberate injury to mankind, in spite of the



STARTLED BY THE NOISE OF THE SHUTTER IT TROTTED TO THE POOL

CAMERA SPORT WITH THE HIPPOPOTAMUS

wonderful means of offence which it undoubtedly possesses in its powerful jaws armed with a formidable set of teeth. The females appear normally more timid than the bulls, but are naturally apt to become aggressive if they find themselves cornered while in company with their young. The cuts and deep scars often found on the hides of old males bear ample testimony to the ferocity which they occasionally display amongst themselves, mostly during the mating season, when desperate fights occur among bulls for the complete mastery over a troop of females. The law of battle is, with these mammals, much more in evidence than among elephant bulls.

The accompanying photographs of a group of three hippopotami depict some of the curious poses and the characteristic attitudes these animals assume on land.

It was on one of my periodic visits to the river that I stumbled on the whole crowd of occupants of this locality. They were basking peacefully some distance from the water. On detecting my presence the troop scattered hurriedly in various directions and some found a sanctum among the adjacent bushes. A cluster of three individuals remained confused and undecided in which direction to escape, apparently disdaining to move towards the shallow water of the partially dried river bed, and probably realising that such a course would be of no avail. The three looked dejected and perturbed, and trotted backwards and forwards in front of a long strip of thorny bush. By employing the simple and harmless ruse of posting a couple of camera bearers one on either side of the strip of vegetation, we made the animals imagine their retreat obstructed on all sides. Presently they began to settle down in a rather diffident and uncertain frame of mind,

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though they showed no sign of fear on their droll faces. They made several attempts to push their way through the elastic but impenetrable tangle of vegetation that appears as the background in the accompanying illustrations. One of the trio was seen with the forepart of its body concealed in the bush and its massive stern exposed towards the observer.

Realising at last the futility of endeavouring to break a way through the impenetrable vegetation, they in time accepted their situation as inevitable, resigned themselves to their fate and remained in full view of their spectators. Unconsciously, they took up the various extraordinary attitudes which I was most eager to seize with the camera. They displayed in turn expressions of attention, expectation and interest in various gradations, at times mingled with resignation, not without a trace of mild defiance or sulkiness. The heat of the day increased their lethargy, and finally one squatted down and regarded the photographic operations with waning interest until it subsequently lay down from sheer indifference and apathy. Another supported his weary head on the back of his resting mate, and remained to all intent and purpose unconcerned with the movements and antics of the human figure in its neighbourhood.

When every now and then I approached the creatures to secure a close portrait they stood up and one member showed an occasional spasm of resentment at the close intrusion by raising its head and moving a pace or two forward in an intimidating fashion, for the indolent and placid beasts appeared to be easily satisfied and disinclined to further efforts in the heat of the day. They did not advance in the formidable manner in which the hippopotamus is often pictured with his



SURPRISED WHILE FEEDING ALONG THE MARGIN OF THE RIVER

CAMERA SPORT WITH THE HIPPOPOTAMUS

great mouth wide open. It is worth noting that these animals possess keen scent, good hearing and excellent eyesight.

The uncommonly short range at which some of the photographs of this peaceful and obliging trio were taken has brought into prominence details that will enable anyone, who studies the changes of their facial expressions, to make a fairly accurate guess at the animals' state of mind at a particular moment. It will be seen that unlike his kinsfolk in captivity, the hippopotamus can show quite a variety of emotional expressions, and offers most interesting data for the study of animal psychology. With the diversity of emotions expressed in their faces they present a striking contrast to the African elephant, whose almost expressionless features have the air of a set and imperturbable mask.

GAITS OF THE HIPPOPOTAMUS

As to the different gaits of the hippopotamus in its untrammelled state, Muybridge, in his interesting work on "Animals in Motion," was evidently in doubt whether it ambles or trots when hard pressed. On page 258, for instance, of his work he expresses his opinion as follows:—

"On dry land it is hardly possible that its fastest gait can be other than the amble; possibly a trot, but with a brief period, if any, of non-support."

In one of the illustrations three hippopotami are seen trotting past the observer. The attitudes of the legs during the different phases appear identical with those of a trotting pig. Slow-motion cinema pictures would doubtless be of great interest in such matters.

I have never seen a hippopotamus *amble* in the manner of

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a hard pressed elephant, and it would seem that this semi-aquatic mammal has only the two gaits, namely, the walk with actions similar to those of nearly all terrestrial vertebrates, and the trot, which Muybridge defines as the system of progress in which each pair of diagonal feet are alternately lifted with more or less synchronism. When a hippopotamus is suddenly alarmed, and in a hurry to escape to the nearest pool, it may well be supposed that it employs its fastest gait, but even in such pressing circumstances I have never seen the animal gallop or even canter. Breaking from the walk immediately into a trot, when hard pressed, these seemingly most ungainly mammals can travel at a fair pace and it will need the efforts of a hardy sprinter to keep up with the trotting beasts for some distance.

* * * * *

During their nocturnal rambles on fast ground they appear to use by preference their old, well-trodden paths along the margin of the river, cutting off the tortuous bends of winding streams: where the earth is muddy or sandy, two well-trodden and distinctly parallel tracks can be seen, with an intervening ridge separating the two tracks. They walk with each lateral pair of legs moving in line, well apart from the other pair, and the feet are but slightly raised from the ground.

From all accounts the hippopotamus is averse from stepping over any obstacle, and the slightest impediment that it recognises as artificial is sufficient to hold it back or cause it to change its path.

The presence of crocodiles in their favourite pools is quite



ANOTHER MEMBER OF THE TRIO SUPPORTS ITS HEAD ON ITS RESTING MATE

CAMERA SPORT WITH THE HIPPOPOTAMUS

a common occurrence, and they do not appear to mind these reptiles being in their close vicinity except during the breeding season, when the crocodiles seem to move away by a tacit understanding, lest they should be driven off by the cows, which are usually vicious at such periods.

The killing of these interesting animals can hardly be called a sport, and few Europeans would be inclined to shoot them unless meat was badly needed. The flesh, which is dark red in colour, is cherished by the natives as a delicacy, and the thick hide provides them with excellent whips. The ivory of the animal's teeth is hard and of comparatively little value.

Natives have various methods of destroying them, in pitfalls along the river banks, or by means of "drop-traps" set over their customary paths.

The gallant way in which the Arab hippo-hunters or harpooners bag their quarry must undoubtedly command our admiration, since it not only requires a certain amount of skill but also entails some risk for the huntsman.

He has frequently to breast the strong current of crocodile-infested rivers when in search of his quarry, which may be basking unconsciously on some sand-bank on the opposite side of the stream. Again, the stealthy approach to within close harpooning distance of his victim necessitates artful stalking. Wounded, the infuriated beast may suddenly be goaded to attack his assailant, and the latter is then called upon to exert his utmost agility to keep away from the snap of the brute's formidable jaws.

The loud grunting bellow, followed by a quick succession of shorter grunts in localities where the hippopotamus occurs, is a weird but common sound at night along the African rivers.

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Besides this the animals can produce quite a variety of other noises that are frequently most deceptive to the listener, and difficult at times to assign with certainty to the hippo. During their nightly excursions along a river the younger members in particular of a school of hippopotami are apt to be attacked by prowling lions, and when the latter are driven to it by hunger they will not shrink from assailing even the master-bull of a troop. Such attacks have been known to occur; but the hippo-bull is, as a rule, capable of escaping with little injury when he is in the proximity of water; he is said to be powerful enough to drag himself and his assailants with him and rid himself of them by plunging into the water.

On the bank of the Guaso Nyiro I once came upon the remains of a young hippopotamus which had evidently been killed by lions during the previous night. The pug-marks round the carcase showed up quite distinctly on the sandy soil, and indicated that there could not have been less than four lions on the kill. The lions were apparently hunting in a pack, and would, in case of need, doubtless have attacked, in concert, a full-grown hippo. I should imagine that in such a case a victory for the lions would only be possible by exhausting the strength of the hippopotamus and relying chiefly on their cunning and agility to avoid the snapping jaws of their formidable quarry.



ONE TURNED ITS HEAD TOWARDS THE INTRUDER AND STARED SULLENLY, PREVIOUS TO A DEMONSTRATION OF
RESENTMENT

CHAPTER X

ON SAFARI TO THE NORTHERN FRONTIER DISTRICT

ON our return from a trip to Lake Natron and the Tanganyika borders, we remained at Nairobi a few days previous to our departure for Archer's Post. Our safari had been sent ahead, a month before, and we expected to join it by motor car in three days, travelling a distance of some hundred and eighty miles from Nairobi to Archer's Post. The latter place had been decided on as our starting point for a journey through the Northern Frontier District of Kenya Colony. This province being under military administration, we were obliged to obtain the necessary sanction from the authorities at Meru: this necessitated going a short distance out of our way.

Leaving Nairobi on the afternoon of the 9th June, we spent the night in comfort at the Blue Post Hotel at Thika, a snug little wayside place overlooking the beautiful Thika waterfalls. Early next morning, my companion, J. H. Barnes, and myself drove off towards Nyeri, on the road that runs through a portion of the Kikuyu country, and we traversed some very pretty tracts. From Fort Hall we travelled over a country consisting of hills ranged in seemingly endless succession, the sides of which are cultivated and intersected by

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narrow paths leading to the isolated clusters of Kikuyu huts. Some of these huts are perched on the summits; others nestle against some steep slope, and are almost hidden in verdure. These hills were doubtless at one time covered with forests: the Kikuyu, a diligent agricultural populace, have in most places claimed the sides for their cultivation, leaving but a summit here and there crowned with a group of tall and stately trees, the detached remains of a primeval vegetation. On we sped in the light converted Ford car, built to cope with the worst of roads, with a light box-body of three-ply wood, which travelled over the road without making too much even of the sticky, red mud found in the glens and valleys. We skirted the ravines lightly along endless hairpin bends and arrived at Nyeri in time for lunch. The same afternoon we left for Nanyuki and sped for many a mile across the prairie-like undulations of the Kenya uplands. To the west and in the distance could be seen the beautiful range of Aberdare Hills, whereas to our right loomed up the impressive shape of Mount Kenya with its summit partly hidden among the clouds. Mount Kenya, as it is seen from a distance, resembles a great mound or a mighty dome covered by dense forests and bamboo jungles in the lower regions: above this belt rise abruptly, in the middle, the rocky peaks, the glaciers and snow-fields in their cirques and valleys.

The road traces across the turf-covered base of the mountain, along the sheep farms of enterprising settlers. Spending the night at Nanyuki, a farming centre situated on the Equator yet enjoying a fine, bracing mountain air, we departed in the morning for Meru, where on our arrival we heard that our safari was encamped at Siole, on a spot about half-way be-

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tween Archer's Post and Meru. The drive through the forest before reaching Meru was, on two occasions, delayed owing to rotten tree stems which had fallen across the road. In the absence of a hand-saw these necessitated our jacking the car over the obstacles. Here the trees are tall and stately, and many of them are covered with creepers that drape the straight stems and hang from the lofty branches in suspended garlands and festoons. Through this damp forest we flitted on and emerged finally upon the open hilly ground round Meru, the headquarters of the K. A. R. (King's African Rifles). Meru is a pretty little hill station with neat houses scattered about the meadow-like undulations.

We were so fortunate as to meet Major Muirhead on our way to the office of the O. C. and, in the absence of the latter, this gentleman very kindly gave us verbal sanction to enter the N. F. D. (Northern Frontier District): we left Meru at about 5 o'clock and reached Siole towards eight in the evening.

At Siole, the headquarters encampment of the Military Transport serving the widely scattered outposts in the Northern Frontier District, we found that our safari had arrived several days earlier, and had pitched camp on the narrow stream from which the post takes its name.

Here we had the pleasure of meeting Capt. C. E. von Otter of the 3rd K. A. R., the O. C. Troops, Turkana, who furnished us with useful information regarding game in the Karamojo and Lake Rudolph districts, which localities we intended at first to include in our journey. He happened to have just arrived from headquarters in the Turkana: his news with regard to game was most disappointing and I was placed under a great obligation to him for saving us a tedious journey

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across desert-like regions with little chance of satisfying our desire for sport. He proved to be a keen game photographer himself, and we speedily found ourselves discussing points of mutual interest. Elephants in the Turkana and Karamojo, as he informed us, may have been plentiful in the earlier days, but they were not so at the moment, and the herds appeared to be mostly migratory. We therefore decided upon the alternative course we had in mind, first to travel east along the Northern Guaso Nyiro to the Lorian and, if necessary for my purpose, onwards to the Juba and Somaliland borders.

Our safari was equipped with this possibility in view, and, after a day or two of preparations at Siolo, we made for Rattray Boma, on the road track to Archer's Post. Here we had the pleasure of meeting Mr. A. Rattray, an enterprising settler who, for some time, had been engaged on his own in capturing and breaking in Grévy zebra with the object of employing this magnificent species of zebra for domestic purposes.

A visit to his stockade, on a later occasion, proved most interesting, and bore evidence of the capable and workmanlike manner in which the catching operations had been planned.

The accompanying illustration shows some of the newly captured specimens in the stables, and presents a fairly representative group of the splendid beasts. Some are seen wearing head stalls, and these had been partly broken into harness. Their condition looked promising in all respects, and Mr. Rattray is confident of ultimate success. Financial help on the part of the Game Department of Kenya Colony would be of great assistance to this enterprising pioneer, and it is to be hoped that some grant from this source will be forthcoming for such useful work.

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A few notes from Mr. Rattray and some interesting comments from the Game Warden, Mr. A. B. Percival, with regard to these particular experiments may prove to be of interest to the reader: these are quoted below, and appeared originally in the "East African Standard" of 27th May, 1922.

"It had long occurred to me that great use might be made of the Grevy zebra as an animal of transport, especially as this country is full of diseases for domestic animals. Oxen get East Coast fever, pleuro-pneumonia, rinderpest, etc.; horses and mules get tsetse fly and horse sickness. The zebra, however, is immune to all these diseases; in fact they run in the tsetse fly parts. The Grevy zebra must not be compared with the Burchell or Grant; the Grevy is a much larger and more powerful animal, and is not so vicious as the Burchell. Within a few weeks of capture I have inspanned them to pull well and steadily.—(Signed) A. RATTRAY."

The following notes on Mr. Rattray's letter are by Mr. A. Blayney Percival, Game Warden of Kenya Colony:—

"Grevy's zebra, a totally different animal from the common or Grant's zebra, so well known and rightly abused, is an animal of the Northern Frontier District of Kenya Colony and of Abyssinia. It is a comparatively newly discovered animal, first known from live specimens sent to France by the Emperor of Abyssinia.

"In size it runs to as much as 15 hands, but its bulk, and more particularly its head, are out of proportion to its height. It is built more like a horse than the donkey-like common zebra.

"So far few have reached the zoos of the world, and I am watching Mr. Rattray's experiments with great interest, more particularly as I have had considerable experience with

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the various attempts to domesticate the common zebra—an intractable, useless brute.

“Mr. Rattray’s points *re* diseases are quite correct, and it would be a real advance for the fly belts of this country if the Grevy’s zebra could become a domesticated animal.

“The first experiments will of necessity be but experiments. Scientific societies will be too anxious to obtain the animals as specimens, but later it is to be hoped that definite economic work will be done with them in areas where no other domesticated animal can live.”

* * * * *

The Grévy is the only species of zebra that occurs north of the Guaso Nyiro. Representatives of the species appear occasionally to cross to the south bank of the river as far as Rattray Boma in certain seasons when they are attracted by more suitable pasturage: here, at times, a massive Grévy stallion may be seen among a few of the ordinary or Grant zebra. The former is easily distinguished from the common kind by its much wider ears, by the narrow stripes, and particularly by its greater stature and heavier build. The difference in height between the two species, the Grévy and the Grant zebra, is from eight to nine inches in favour of the former.

The Grévy zebra is a far handsomer animal in many respects, and possesses decidedly more stamina than the common species. The cry of the Grévy is quite different from that of the Grant zebra. The Grant produces a succession of high pitched barks, whereas the Grévy utters a hoarse, deep grunt, varied by a short sound approaching a whistle, resembling the intermediate noises in the bray of an ass.

We crossed the Northern Guaso Nyiro and reached



THE NORTHERN GUASO NYIRO AT ARCHER'S POST

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Archer's Post on the 14th June. Groves of dome palms from a distinctive feature of the river banks of the Northern Frontier District. The country immediately across the river gives one a first impression of these waterless, inhospitable regions. The land consists, for the greater part, of sand and broken lava, varied by rock-strewn scrub desert: forbidding hills and extinct volcanoes skirt the continuation of the great Rift Valley to the north, and the volcanic regions are alternated by undulating ground of Eozoic origin, covered with thorn bush, scattered mimosa groves and parched brushwood.

The clerk in charge of the post very kindly offered us a part of the limited storage accommodation at the small settlement, which consists of a cluster of huts situated on a confined plateau of a barren hill, and overlooking the main ford of the Guaso Nyiro. Leaving the bulk of our provisions at this post, we decided upon Murti, a point nearly a hundred miles to the east, as our next supply depot, in order to have our safari burdened with less weight, and thereby make it as mobile as possible.

Considering the purpose for which we entered these inhospitable regions, it was only natural that my thoughts should go back to what I had read of the famous hunter, A. H. Neumann, whose main camp, in former days, was situated some ten miles upstream at a point that still bears the name Campi Ya Nyama Yango.*

* It will perhaps not be inappropriate to quote here the late President Roosevelt's tribute to Neumann's memory, which reads as follows ("African Game Trails," John Murray, 1910, p. 306):

"Near this camp were the remains of the 'boma' or home camp of Arthur Neumann, once the most famous elephant hunter between the Tana and Lake Rudolph. Neumann, whose native name was Nyama Yango, was a strange, moody man, who died by his own hand. He was a mighty hunter, of bold and adventure-

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After a few minutes of travel from Archer's Post one is beyond all signs of civilization or human habitation. Several days of travel, by easy stages, brought us to a place known as Campi Kitemaster.

On the day of our arrival at this camping ground, after several hours of tramping in the burning heat through a monotonous stretch of waterless scrub country and over the sandy Nyika soil, the track we were following turned to-

loving temper. With whites he was unsocial, living in this far-off region exactly like a native, and all alone among the natives; living in some respects too much like a native. But from the native standpoint, and without making any effort to turn the natives into anything except what they were, he did them good, and left a deep impression on their minds. They talked to us often about him, in many different places; they would not believe that he was dead, and, when assured it was so, they showed real grief. At Meru boma, when we saw the Meru tribesmen dance, one of the songs they sang was: 'Since Nyama Yango came, our sheep graze untouched by the Samburu'; and, rather curiously, the Samburu sing a similar song, reciting how he saved them from the fear of having their herds raided by the nomads farther north."

Easy of access as the locality is at present, in the days of Neumann, Count Teleki, von Höhnel, Chanler and others they had to travel and safari for months along the paths used by Swahili traders from the coast. Touching the Mission Station of Ikutha, which from Neumann's accounts (see "Elephant Hunting in E. Equatorial Africa") appeared then to be the last outpost of civilisation in this direction, situated on the outskirts of the Wakamba country (Ukambani), he had to strike across the Tana and reach Laiju, at the foot of the Jambini Hill Range. The latter is situated some five weeks' caravan journey from the coast, and thence he proceeded to the Guaso Nyiro, where he decided upon his main or base camp for his travels north. The spot is some ten miles upstream from Archer's Post. From here he made his various excursions to the Lorogi Mountains, the Matthews Range, and, on one occasion, proceeded as far north as Reshiat and Kéré in the disputed Abyssinian border regions beyond the north-western extremity of Lake Rudolph. Neumann was one among several pioneers and intrepid hunters of that day, little known, but nevertheless among those who have made it very easy for later comers to travel through these regions.

The authorities in charge of the K.A.R. Transport of the N.F.D. informed us that a road track had just been completed to the south-eastern extremity of Lake Rudolph to facilitate the provisioning of their outposts, which guard the Abyssinian frontier and prevent the frontier tribesmen from raiding the Turkana, and, incidentally, to stop the wholesale slaughter of game for the sake of ivory and hides in the regions round Mount Nyiro and Mount Kulal. In these regions the Game Department have obviously little effective control, or more likely none at all.



A VIEW OF THE NYIKA IN THE NORTHERN FRONTIER DISTRICT

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wards the river. This soil, porous and arid during the dry season, occurs on the extensive beds of Eozoic rock, and its vegetation consists mainly of yellow tufts of grass, sparsely distributed, among hardy and drought-resisting acacias, all combining to give the country its typical desert features. Although apparently devoid of inhabitants, the land is alive with a peculiarly fascinating beauty.

The barrenness of the soil is attributed to its want of capacity to retain moisture, but, as it is formed chiefly by the decay and decomposition of gneiss rock, it is rich in plant foods, and productive after even a few light showers. Responsive as it is to the limited quantity of water it receives during the "wet" weather, with a rainfall of from five to ten inches per annum, it needs some further moisture to carry the existence of the vegetation through the long periods of drought. This very limited amount of moisture is evidently supplied by the dew, which is so scanty that it is hardly perceptible. It is remarkable to see how the Rendili and Boran cattle, mostly sheep and goats, nevertheless appear to thrive on the miserable pasturage found in the open spaces between the clumps of scrub and brushwood. This is true also of the Somali cattle in the waterless country north of the Lorian Swamp and beyond, but these are, in a way, better off, as the herds are periodically led to the attractive pasturage round this great marsh.

Here and there, on the Nyika (wilderness), there rise abruptly from the plains singular cone-shaped and steep-sided mountains, and an occasional jumbled pile of gigantic boulders. Such mighty accumulations of rock have apparently been exposed as the result of a gradual denudation of moun-

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tains in former times. The waste from these rocks, containing the necessary nutritious elements, forms the soil around.*

Shortly past noon the dusty wagon track had led us back along the margin of the Guaso Nyiro. We skirted for a while the fringe of dome palms along the river bank, and chose a suitable camping ground on the riverside. After a welcome rest, I decided to look around on the off-chance of stumbling on something to photograph. Numerous tracks, intersecting the margin of the river, bore ample testimony to the fact that buffalo and rhino occurred in the locality, and an occasional spoor of elephant showed that our favourite camera-quarry was also likely to be met with. I managed to stalk a bull carrying a pair of tusks estimated at thirty to forty pounds apiece, and secured photographs of the animal in the particular environment I desired.

Elephants in this locality appear to be partial to the fruit of the dome palm, † and are frequently to be found loitering

* In a highly instructive work, "The Rift Valleys and Geology of East Africa" (Seeley, April, 1921), Professor J. W. Gregory gives a most comprehensive account of the origin of these mountains or hills. On page 35 we find:

"The formation of these hills has been much discussed, for their forms are impressive. Some of them are tent-shaped; the sides are often precipitous and they consist of unscalable towers or lofty pinnacles."

A further passage relating to the piles of rock and remnants of these hills, which Professor Gregory terms "residual mountains of circumdenudation," reads as follows:

"... and these hills have been gradually reduced in size first by continued stream action, and later, as the climate became drier, by the splitting off of thin slabs (exfoliation) by sudden heating and cooling at sunrise and sunset—aided to some extent by bush fires."

And again:

"The tors are therefore residual hills left by the denudation of mountain ranges which have been reduced, first by water, when the rainfall was heavier, and then shaped into tors by exposure to the sun and storms in an arid tropical climate."

† It may be observed from the accompanying photograph that the dome, or dôm palm (*Hyphæne thebaica*) of East Africa closely resembles the common



AN ELEPHANT FEEDING ON THE NUTS OF THE DOME PALM

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in the groves. The accompanying illustration depicts the creature with its trunk curled inwards in the act of pushing a palm-nut into its mouth shortly before it sauntered towards me and became suddenly aware of my presence. Startled by the strange apparition, it wheeled round unceremoniously and shuffled off.

The river was at this point some forty yards in width, and the banks showed unmistakable signs of flood during past rainy seasons, when the water was said to rush down with great impetuosity and swamp the extensive, marshy flat at Lorian, some eighty miles farther down its course. From the latter it finds a passage, or an outlet, at the south-eastern extremity of the swamp, and travels along a sandy watercourse, known as the Lak Dera, to the coast. At other times, during the very dry months, this seasonal course of the Guaso Nyiro is but a drift of dazzling sand, the glare and the radiating heat from which become tiresome and trying to the traveller's eyes.

The arid and seemingly entirely forsaken regions of the Northern Frontier Province are magnificent in their intense desolation.

palmyra in the form and texture of its fan-shaped leaves, but, unlike the palmyra, which has a single stem, the dome palm spreads its stems out in a stool, and each of them is usually forked.

The nuts of this palm grow in bunches, and are of an irregular, oval shape, about three inches long, with sometimes over a hundred nuts to the bunch. The fibrous rind of the fruit varies in thickness from one eighth to a quarter of an inch, with a hard outside skin of a rich brown hue, which gives the appearance of a natural polish. It appears to be the rind only on which the elephant feeds, and this must necessarily be the only part of the fruit which contains the nutritious constituent in the shape of a mealy substance between the fibrous strands. The kernel, which is about the size of an ordinary walnut and consists of vegetable ivory, is exceedingly hard, and the elephant spits it out after chewing off the rind. Many of these kernels, however, pass in the dung of the elephants inhabiting such localities, as the animals, in their greediness, frequently swallow them. The palm leaves furnish handy material for temporary huts and mats, and also for ropes in an emergency.

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After a few days at Campi Kitemaster, where we enjoyed such sport as was obtainable with rhino and buffalo, we proceeded further down the river.

Our next camp was pitched in a locality known to the Borans by the name of Bolessa, a pretty little spot, as may be judged from the accompanying photograph of a river scene. The Borans shown in this illustration crossing the stream kept beating the water energetically with their spears, apparently with the object of scaring the crocodiles.

It is not often, however, that crocodiles here become so bold as to attack human beings: the ones we sighted on occasions, basking on some rock or sand-bank, were small and timid. Nevertheless, during seasons of excessive drought, when the Borans forsake the waterless regions and flock with their cattle to the margin of the stream, they appear to suffer frequent casualties among their sheep and goats from attacks of these reptiles.

Among our pack animals we lost one donkey and one mule through crocodiles during the whole of our trip, when the thirsty beasts were led to water after a hot march. On both occasions the crocodiles failed to drag their victims below the surface of the water, but had unfortunately done sufficient damage to cause the animals to succumb from the poison of their fangs.

In this very locality I succeeded in securing my finest buffalo photo, and the grand beast is shown in its specific environment in a previous chapter. (See Chapter VII).

From Bolessa we travelled over a sandy, dusty wagon track, heading straight for the base of the Siria Plateau. This plateau forms the rugged and impressive termination of a belt



BORANS CROSSING THE NORTHERN GUASO NYIRO

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of volcanic rock extending south-eastward. For the first mile or two the country traversed consists of an open plain, covered with a scraggy, heather-like growth, a foot or two in height. Towards the palm-bordered course of the Guaso Nyiro the plain is studded with clumps of suaki bush, offering, to some extent, a relief to the eyes by its close and light green foliage.

The track next turns eastward, and passes between the lava-rock-strewn spur of the Siria Plateau on the one side and, on the other side, the fringe of green vegetation along the river. In between, the turfless, undulating ground, porous and of volcanic origin, is thinly covered with the thorn-scrub and brushwood typical of these parts of the colony. Following the contour of the base, we reached Murti, an insignificant K.A.R. post, situated at the foot of the south-eastern promontory of the plateau. A few small palm-leaf huts among a jumble of lava-rock constitute a rough and ready settlement in these inhospitable regions. From the rugged slope of the spur the glaring country below may be viewed for many miles. A waterless and desolate plain stretches on the left towards Wajhier, exposed to the scorching rays of a tropical sun. To the right, the winding course of the Guaso Nyiro can be traced for many miles, conspicuously outlined by a ribbon of green vegetation. The palms skirting the banks appear to cease in the hazy distance and to be gradually replaced by strips of mimosa bush. We enjoyed a few days' sport at Murti, and camped at the river-side. Fish was abundant in the stream, and flocks of vulturine guinea-fowl flitted about in the bush during the day and fed in the evenings on the fringes of the river vegetation.

Elephants—singly, or in clusters of three or four—and

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small herds of buffalo were occasionally met with among the suaki bushes along the river.

Having chosen Murti as a provision depot, we left here part of our stores in charge of an askari, and obtained the necessary pack camels through the intermediary of an obliging Goanese clerk at the K.A.R. post. We started on July 2nd for the locality known as Abbas Wen, some five days' march from Murti.

It is not my intention to weary the reader with a day by day account of the monotonous march from Murti to Abbas Wen (Hoas Wen), but I shall presently relate my camera experiences at the latter place. The journey continued for some days over a vast desert-like region along the narrow band of trees marking the course of the river. The stream narrowed with every league we advanced towards our destination. Now and then we spied a small herd of Grévy zebra or a troop of Grant gazelles watching at a distance our caravan trudging along the edge of the silent desert region. The animals would scatter the moment the wind, which blew in irregular puffs, turned in their direction. With the exception of a few low, parched bushes, there was hardly any vegetation beyond the narrow green strip that marks the course of the Guaso Nyiro. A few straggling blades of grass, yellow and dry, occurred here and there on the level plain, and one marvelled how animals in such regions could find sufficient nourishment for their sustenance, and why they do not migrate to more congenial pastures.

On the 7th July we entered upon a dusty plain, devoid of a single green blade of grass, where the rotten ground showed numerous shallow pit-holes and crevices. From these

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peeped, here and there, a tuft of parched swamp growth or the desiccated remnants of the roots of former bulrushes. We had apparently reached a spot which on the map of this region is marked "swamp in rains." As we later heard from the Boran cattle owners, the area was indeed, at one time, marshy and covered with tall rush. Owing to four consecutive years of severe drought, during which period the rains had apparently completely failed, all the swamp growth had dried up, leaving the area a dusty, bleak and desolate waste. Numerous old track lines of oval pit-holes were found here intersecting the once doubtless marshy ground. These could be traced in all directions across the plain, and gave ample evidence that the locality was formerly a veritable paradise for elephants.

The Guaso Nyiro, at this point barely half the width it had been at Murti, cuts its tortuous way through the soft and porous soil, and flows along many hairpin bends on its course towards the Lorian Swamp. We camped for the night on the edge of this inhospitable plain, and decided to travel across it at daybreak.

The putrefying bodies of wretched, starved cattle were lying here and there along the banks of the stream, and polluted the water. Led, in an exhausted condition, from their distant, miserable pasturage, some of the poor beasts remained near the water's edge to die. It is remarkable on what little pasturage the hardy cattle are able to subsist in these regions of drought, where they are at times compelled to take to browsing on the scrub.

The opposite edge of the plain was reached shortly before noon, and we had our camp pitched below a flat-crowned acacia tree, the only one visible for miles around. It was

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conveniently situated at one of the numerous bends of the stream, some little distance from a habitual watering place for Boran cattle and camels of the neighbourhood. On the whole the locality did not look particularly inviting or promising for my purpose, and it was difficult to imagine that the adjacent dry country still harboured the game we sought. On the distant edges around the plain were narrow strips of mimosa and thorn bush, which were said to be frequent resorts of the elephants that had remained in this locality. As we subsequently found, the herds hugged these isolated patches of vegetation during the heat of the day and sauntered at night across the treeless plain to quench their thirst at the stream.



ELEPHANTS CONVERGING TOWARDS THE INTRUDER (ABBAS WEN)

CHAPTER XI

WILD ELEPHANTS AND THE CAMERA AT ABBAS WEN

AFTER a few weary days of searching the arid country and visiting the outlying belts of thorn-scrub, sparsely scattered over the desert-like plain, we received news from a Boran herdsman that a troop of elephants had been sighted retiring in the early morning into a strip of acacia bush some nine miles distant from our camp.

The following morning we departed at the first signs of dawn, and reached this particular bush shortly after eight o'clock, only to be disappointed in discovering that the herd had wandered through and travelled across the intervening stretches of desert from one isolated strip of bush to the next. It was not until three o'clock in the afternoon that we managed to come upon them by carefully tracing the fresh footprints among a multitude of old tracks that intersected the bare plains in all directions.

On reaching the fringe of a patch of mimosa trees, among which grew a variety of other drought-resisting vegetation, we pursued our way zigzag in the direction of what appeared to be the tallest tree in the neighbourhood. It possessed a wide-spreading crown and promised shade for a well-earned rest.

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Suddenly we were startled by a familiar throaty sound, a common one among the noises emitted by a herd of elephants when a particular member feels annoyed and in this way expresses his resentment against one of his fellows.

This timely though unintentional warning, just as we had almost stumbled on the resting herd, made us keep carefully to leeward of the elephants.

We crept closely past them in the direction of an open glade about half an acre in extent, surrounded on three sides by dense bush impenetrable to man, except for a thorny pathway here and there, rather like a crevice in a wall of verdure, caused by the passage of an elephant at some time or other. From the occasional sounds of the resting herd we discovered that they were gathered somewhere round the large acacia tree, which formed part of the vegetation surrounding the glade. Stealing up to the edge of the bush I managed to obtain a glimpse of the elephants.

The base of the tree, under which they were apparently resting, was concealed by a tangle of growth in places eight to nine feet in height. The broad backs of the elephants showed just above the top of the shrubbery: they were evidently huddled together, flank to flank, each endeavouring to press towards the bole of the tree, so as to secure a share of the shade: they were enjoying their siesta in a half somnolent fashion. The choice places, just below the crown, were occupied by the more stalwart members of the herd: where might counts for right, the younger members have to be contented with the inferior places, and some had their backs fully exposed to the hot rays of the tropical sun. An occasional discontented individual was heard to utter a short throaty sound as a token

WILD ELEPHANTS AND THE CAMERA

of resentment against undue pressure upon his flank by some mightier brother or a restless comrade among the dozing community.

The group remained uncommonly quiet except for an occasional flap of their large ears, and I finally decided to exercise a certain amount of patience and wait on the edge of the glade until the animals should begin their evening activities. It was not, however, until four o'clock that the complacent creatures began to stir and finally made up their minds to move out into the open to commence their feed and their evening gambol. Some of the younger members, at first, appeared to be reluctant to budge, and it needed the persuasion of a gaunt old cow-elephant to get the lingering juniors on the move. The bush was too tall and dense to allow us to count all the animals, and in our curiosity to do so we had nearly upset our chances: some time later we became assured that there were not less than eleven of them, representing all ages and sizes, with a magnificent herd-bull among them and a tiny mite a few months old.

It was thus about four o'clock that the first signs of activity became perceptible.

An occasional massive head, with ears pressed back against the shoulders by the pressure of the packing foliage, peeped out from among an appropriate setting of verdure. Every now and then a trunk was raised, and with the sensitive tip of the muzzle it felt, in a careful and wavering manner, for a branch of the prickly mimosa.

A rhythmic sound, caused by the moving of a tough surface against the coarse bark of some tree, accompanied the gentle swaying of the large acacia, and made one imagine the

STALKING BIG GAME WITH A CAMERA

heavy beast leaning against the stem and contentedly rubbing its body with that listless backward and forward motion so typical of these indolent animals.

One massive back appeared in the bush to tower above the others, and this, as we later discovered, belonged to a very fine herd-bull with unusually long tusks estimated at roughly seventy pounds apiece: this particular bull is depicted facing the camera, in the accompanying photographs, with its ears fully extended.

It was indeed the largest we had seen up till now. By the term herd-bull is meant the breeding male, which consorts mostly with the herd and is rarely met with far from the herd to which it belongs. Herd-bulls do not often carry tusks weighing over fifty pounds apiece. The old fellows with heavier ivory will for the most part shun the troop as being too noisy to suit their inclination for seclusion, and associate with their equals in separate parties of three or four; they usually, however, remain in touch with the herd by the help of their keen scent. Very old bulls are occasionally met with roaming in complete isolation. Among the northern specimens of Kenya Colony an elephant may on the whole be considered to have reached the prime of life when his tusks attain a weight in the neighbourhood of fifty pounds apiece.

The intermittent quivering of branches and foliage was now observed approaching the fringe of the bush as the bulky animals every now and then moved a pace or two, ceasing when they were tempted by a bunch of young shoots. Gradually the dark forms loomed up on the edge of the glade and we were obliged to move to the opposite margin of the clearing and await the coming of the feeding giants into the open.



A FAMILY GROUP OF ELEPHANTS

WILD ELEPHANTS AND THE CAMERA

Let the reader imagine a glade, carpeted with an uneven and scraggy growth some two feet in height, interspersed with tufts of dry, yellow grass. The clear space is, roughly, surrounded on three sides by a wall of thorny verdure, impenetrable to man except for the few crevice-like openings already referred to: these look by no means inviting for hasty retreat in case of emergency, owing to the numerous branches straggling across the narrow passages.

We had to remain down wind, and therefore to occupy, in relation to the wind, the further margin of the clearing. The breeze travelled across the glade from the direction of the only reasonable egress at our disposal, and even this space, as we later found, became likewise occupied by sauntering individuals of the herd when they broke forth from out of the bush at various points. The sun was fortunately in our favour, and I pitched my light field tripod and reflex camera in the shade, a few feet from an impenetrable clump of vegetation that served me as a welcome and suitable background against which the weak-sighted beasts would be unlikely to pick me out. My companion was posted a few paces to my right with rifle ready for emergency, and both of us remained motionless. Thus we awaited events in our chosen arena in a state of tense excitement, with our eyes riveted on a spot across the glade, some forty yards from where we stood, from which we expected the first elephants to emerge into the open. On this spot I had trained the lens of my camera, and here we were gratified with the magnificent sights that are shown in the accompanying illustrations.

An adult male was the first to appear in the glade; then followed, after a pause of a few minutes, a pair of staid

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mothers, each with her young one pressed close to her flank. Shortly after emerging from the bush they scattered, and each went its own way.

Next follows the quaint little family group which has already figured in an earlier chapter of this volume, consisting of a matron facing in the direction of the camera, with her latest baby, a few months old, standing in profile before her. The funny little creature has partly cocked its ears, which appear greatly out of proportion to its diminutive body. It is facing its larger brother, which in turn seems lost in admiration of the promising infant.

We had, however, to cope with more than we had expected at first, as the members of the herd did not all appear from the same section of the bush: it became a lively scene when the giants crackled through the tangled branches and emerged from all points except from the wall of vegetation that formed our background.

A strange sensation came over me as I remained at my post behind the camera, motionless but for a fumbling with the focussing knob, while I peered intermittently into the hood to get the silent-footed monsters in focus as they wandered unconsciously to within a few yards from the lens. The smooth release of the camera shutter, at judicious intervals, did not attract their attention, but the fluttering of the film-tabs as they were torn after each exposure caused an occasional individual to cock its ears in a casual manner.

The breeze was fortunately strong and maintained its original direction. It is astonishing to observe how little impression a motionless human figure in khaki conveys to the unsuspecting and weak-sighted animals, particularly when the



SCATTERING OF THE FAMILY GROUP

WILD ELEPHANTS AND THE CAMERA

figure is favourably blended with the colours of a suitable background. Eagerly intent on making the best of this rare opportunity, I stole up and ventured further afield when I imagined that none of the complacently feeding and sauntering elephants were facing in my direction.

My movements were promptly detected, and the master bull of the herd slewed round and looked down upon the puny figure of man, with its huge ears spread out to their fullest extent.

The moments in which I placed my tripod in position and completed the exposure can perhaps better be imagined than described. The strain at one point became distinctly awkward when the attention of the leading cow-elephant, on the extreme left of the group, was likewise attracted during the few seconds in which I was performing the focussing, and she assumed the inquiring and aggressive pose displayed in the accompanying photograph. A speculative moment, indeed, as several members of the group were within twenty yards of the operator! I have rarely felt myself more insecure than when I was peering into the hood, glancing up anxiously every now and then at my colossal customers, expecting at any moment a sudden and unpleasant change in the situation.

Some of the others gradually began to show signs of instinctive uneasiness, and after a few doubtful seconds a mild alarm became perceptible. From all sides of the surrounding bushes individual elephants belonging to the herd brushed forth into the open to join their fellows: to our infinite relief the leaders wheeled round, in perfect silence, and upwards of eleven dark and massive bulks moved across the glade. Then

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one by one the grey-black sterns vanished into the opposite bush and immediately became engulfed by the thorny vegetation.

I turned my head in the direction of my friend, and a reciprocal smile, the result of the sudden relaxation in the tense situation, conveyed our mutual congratulations. It was a good moment!

Another little adventure was to follow a few minutes later, for it was clearly Dame Fortune's humour to favour me on this day with exceptional opportunities.

Treading in the wake of the herd, through the path made by the elephants as they formed up among the elastic vegetation and crashed their way through in a body, we found them gathered in an open space with several of the members alert and standing to attention, all in an irregular group. It now became clear that the herd resented our pursuit and this second intrusion, for they turned, drew up in a line, and faced us. Carried away by eagerness, I decided on the spur of the moment to move likewise into the open, reflex camera in hand, and so keep clear of the obstruction inevitably caused by the straggling branches of the scrub. I was thus in full view of the now alert herd, and although the light was beginning to fail, I experienced no difficulty in securing the accompanying illustration, while my companion stood a few paces beside me, rifle poised for action.

Shortly after the first exposure was made they closed up in a mass, with their bodies almost flank to flank, and showed their intentions of a concerted attack on the intruders. Their movements were executed in perfect order and with the most daunting silence until they formed a superbly dominating



THE MASTER BULL OF THE HERD IS GAZING AT THE INTRUDER



ASSUMES A CHALLENGING ATTITUDE

WILD ELEPHANTS AND THE CAMERA

frontage. Some of the members had their ears partly extended, others at full cock, as they lined up for a charge. Those apparently eager to destroy their pursuers had begun to thrust their tusks forward, as shown by the attitude of a pair on the right of the advancing herd. Others, on the other hand, appeared at first somewhat hesitant and less disposed to face their antagonists, but remained nevertheless influenced by the unwavering actions of their leaders.

Slowly at first they converged towards the camera; on they came in the most complete silence, and strode forward, presenting a picture of crushing might and strength.

The crisp report of my friend's cordite rifle, following a second or two after my last exposure, warned me that the time had arrived for instant and energetic action if we were to succeed in turning the herd at the critical moment. Grasping my rifle, I witnessed, to our intense relief, the sudden confusion into which they had been thrown at a moment when it seemed inevitable that the whole line of elephants would gain the ground we held.

The instant the bullet struck what appeared to be the most eager member of the herd, the animal pulled up in a sudden jerky manner and stood stock still. The shot had evidently had the desired effect. The others, however, were carried forward a pace or two by the impetus and momentum of their heavy bodies before they halted. Their anger, checked by the report of the gun and presumably also by the effect on their stricken comrade, abated completely, and it was curious to watch the confusion that ensued among the herd.

The mass of elephants, unable to make up their minds in which direction to retreat, stood at first huddled together in

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wavering fashion until at length they recovered themselves and collected their senses from the sudden surprise and finally departed towards the cover of an adjacent mimosa grove.

The sights we had witnessed this day may be reckoned among the rarest and perhaps the most impressive that the camera hunter can ever expect to see.

The light had begun to wane, and half an hour later twilight was falling fast. We reached camp late in the evening: on the way our minds were occupied in recounting the day's experiences. And thus ended our adventures at Abbas Wen.



A SECOND MEETING WITH THE HERD



THE MASS OF ELEPHANTS IN MOVEMENT TOWARDS THE INTRUDERS

CHAPTER XII

WITH CAMERA AFTER ELEPHANTS IN THE LORIAN SWAMP

ON the afternoon of the 17th of July the safari departed from Abbas Wen, and the night was spent half-way between the latter and the Lorian. Before daybreak next morning we moved on, and towards nine o'clock a narrow strip of dark verdure on the distant horizon offered a welcome relief from the continual glare of the sand, the monotonous patches of stunted scrub, and the dusty, desert-like plain at Abbas Wen.

The Lorian Swamp was now in sight. A prairie-like flat, covered with cropped yellowish grass, separated the distant green of the marsh from the bare, sun-baked ground over which we had travelled for many miles: this strip of meadow formed a kind of margin round the swamp.

A pleasant colour-contrast indeed, but we soon found that the country was devoid of shade. The prospect of a few weeks of a camp exposed all day long to the penetrating rays of the equatorial sun took something away from my pleasure at reaching a place where I hoped to get excellent sport.

The strip of green extended gradually in width as we approached until we could distinguish the waving rushes on

STALKING BIG GAME WITH A CAMERA

the edge of the great marsh. To the south, as far as the eye could take in, stretched a steppe-like plain where the pale hue of the grass faded in the distance and merged into the colour of the sand beyond.

Here and there clusters of beehive huts were dotted about the flat open country: such huts are built of a rough, brushwood frame, covered with rush from the adjacent marsh, and are provided with a small aperture to serve as a doorway for the Somali inhabitants. To the north of the low-lying expanse of the swamp the ground rises gently from the edge of the bulrushes towards a desolate tract of parched scrub, and the intervening strip of grass land, a few hundred yards in width, forms the marginal area extending for miles along the northern edge of the marsh. During the drought months this marginal area offers the nomadic Boran and Somali cattle-owners the best pasturage to be found in a vast, waterless region of several hundreds of square miles. During the best months (we can hardly speak of a rainy season, as the annual rainfall has rarely been known to exceed eight inches) the water in the swamp may on occasion overflow this belt and encroach upon the edges of the scrub, thereby furnishing the necessary moisture to maintain it as an excellent pasturage.

The Northern Guaso Nyiro empties itself into the marsh, but owing to four consecutive years of severe drought in these arid parts of the colony the water in the swamp had receded to a great extent. Numerous herds of Boran and Somali cattle had flocked to the locality, and the chances of sport seemed at first rather problematical.

Occasionally a herd of elephants wandered from the scrub-desert across the marginal pasturage where the Borans had



ELEPHANTS IN THE LORIAN SWAMP

WITH CAMERA AFTER ELEPHANTS

pitched a number of *zaribas*. As their ingress and egress to and from the swamp could hardly be made during the daylight hours without their encountering a troop of grazing cattle, the elephants were in the habit of crossing the margin after dark, and remained in the swamp during the day. Their nocturnal tracks were frequently observed to pass alongside the *zaribas*. The elephants in this locality, as we found later, present a curious mixture of timidity and defiance. They are apt to become aggressive on the occasions when they are pursued amidst their formidable covert of rush. No wonder that the inhabitants in this area show a marked respect for them and give them a wide berth when they happen to meet with individuals sauntering in the open or feeding on the edges of the marsh. The animals seem in consequence to have gained a certain amount of confidence and cultivated a kind of contempt for man.

They are said to become decidedly dangerous during the periods of severe drought, when the Guaso Nyiro runs dry and the moisture in the swamp is consequently limited to a pool here and there. These droughts have of late been frequent in this desolate region, and at such times the elephants are disposed to dispute the water sources with unusual stubbornness. The herdsmen protect themselves on such occasions by remaining behind the cover of their herded cattle, which they are compelled to keep near the water in order to save them from dying of thirst.

Casualties among these Boran and Somali herdsmen are not infrequent. Cows with their young are said to become especially malignant under such conditions and inclined to attack without the slightest provocation.

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On our arrival we pitched our camp a few hundred yards from the spot in which the Guaso Nyiro enters the western edge of the swamp. Its bed, which in its higher course at Archer's Post is some seventy yards across, is here barely thirty feet from one bank to the other, and it is no more than an insignificant trickling stream during the months of drought in the region in which it rises.

The tortuous course of this river, as it cuts its way across the flat, desert-like plains, allows a vast quantity of water to be absorbed by the permeable soil, besides which there is a further considerable amount of loss through intensified evaporation. Like most rivers in East Africa, the Guaso Nyiro rises and falls suddenly in accordance with the rainfall at its sources and in the country it traverses in its upper course. At one season there is an abundance of water, and at other times of the year a dire scarcity.

Several days of waiting rewarded us with a grand spectacle in the shape of a large herd of some sixty elephants moving across the swamp. The dark bodies stood out conspicuously from among the rushes and their massive heads and broad sterns kept alternately rising and falling as they ploughed sedately through the marshy ground and sank deep into the quagmires. Day after day we trudged along the sodden tracks of our quarry, but failed to get near the animals on favourable ground. It was exasperating at times to watch some of the monsters come to within twenty yards of the camera and yet not to be in a position to take a photograph owing to the interposing vegetation. Times out of number such disappointments occurred until one day I happened to strike extraordinarily good luck.



FOR A TIME THE ELEPHANTS REMAINED IN A WAVERING ATTITUDE AND SOME STOOD WITH TRUNKS ALOFT SCENTING IN
OUR DIRECTION



THEY FINALLY DECIDED TO MOVE TOWARDS US

WITH CAMERA AFTER ELEPHANTS

The accompanying series of photographs of an advancing herd, secured in rapid succession, was only made possible by the use of a film-pack. A slight racking out of the camera was then all that was needed when the approaching animals had passed the range of infinity focus.

That the last exposures of the advancing animals succeeded so well was due partly to a certain element of luck, but mainly to the cool and collected way in which my companion permitted me to continue the photographing operations, and abstained from using his rifle until a collision with the animals became imminent. The range at which the last photograph of the approaching herd was taken was about a couple of dozen paces; the next moment my companion shouted his last warning that action with the rifles was needed, and, as far as I remember, his shot rang out a second or two after the release of the shutter, when the female depicted with her young in the centre of the group had decided to charge home at us. At the moment the idea of recording the fascinating and impressive sight of the advancing beasts was so tempting that I was unconsciously disposed to pay no heed to the probable consequences.

A detailed account of the incidents that led up finally to the taking of this series of photographs may perhaps be of some interest to the reader, as here we meet with the East African elephant in quite different surroundings from those in which it has been illustrated and described in the preceding chapters.

Skirting the edge of the swamp one morning we espied among the rush the black shapes of a scattered herd of feeding elephants. The upper parts of their bodies showed above

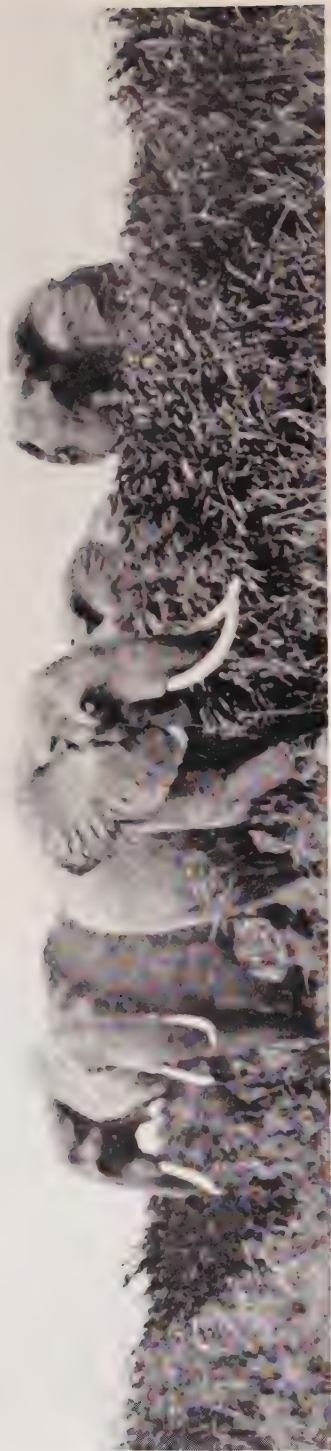
STALKING BIG GAME WITH A CAMERA

the luxuriant growth and formed massive and sphinx-like silhouettes against the bright and cloudless sky. A straggling line of the ponderous beasts could be discerned moving from a distant edge of the swamp towards the middle of the marsh, plodding slowly through the soft mud to join their feeding comrades.

Following in the wake of our Somali guide, who seemed to be tolerably well acquainted with the swamp, we entered the marsh, and kept along the elephant tracks. We found at first no difficulty about picking our way through the morass, and proceeded in the direction of the herd. As we advanced the paths grew less and less defined and we finally struggled in single file through bulrushes reaching several feet above our heads. The going was difficult and in many places we stumbled on to the slushy tracks of the beast with awkward pit holes concealed below the surface of the stagnant water. Every now and then we came upon a patch of higher ground which formed attractive glades amidst the stagnant pools and bulrushes. From these clearings we could discern the spot in which the elephants were feeding by the hovering egrets as they flew up and settled on the backs of their hosts. We had approached the elephants to within a hundred yards, and could hear them quite distinctly splashing through the morass. Now and again a massive head would be raised above the rush, or a trunk thrown aloft by some cautious individual seeking to investigate with its poised tip the scent wafting from a passing herd of cattle in the distance.

It is under such conditions that the elephant's remarkably keen sense of smell can be observed at leisure.

As luck would have it a group from the feeding herd



ADVANCING ELEPHANTS IN THE LORIAN SWAMP

WITH CAMERA AFTER ELEPHANTS

detached itself and moved towards a projection of the glade in which we found ourselves at the time. For a moment I had a hope that they would appear in full view upon the clearing. They remained, however, for some time on the edge, among the rush. Having ascertained the whereabouts of the stragglers so as to avoid giving them our wind, we proceeded across the clearing towards the group. I pitched my tripod in the open, thirty to forty paces from the rush from which the animals were expected to emerge and give me a chance to snap them as they brushed forth from cover. We were confident that, as a previous experience had shown us, the peaceable beasts would turn the moment they discovered us at close quarters. This time we were mistaken.

Slowly they gathered into a cluster and appeared somewhat restless. Our excitement increased every time the cluster swayed towards the edge of the glade. They remained stationary for a while.

They stood thus, some seven of them bunched together, with a restless calf a few paces from its mother.

Although we were well to leeward of the wind one or two had evidently become aware of our presence, as they commenced searching in our direction with the poised tips of their raised trunks in a futile endeavour to acquaint themselves more thoroughly with the nature of the strange intrusion (see illustration).

The group contained a mother with two calves of different ages, as may be seen from an accompanying photograph, and also a bull with uncommonly fine tusks. A rare opportunity indeed!

I found a tripod of great use as a rest for my camera with-

STALKING BIG GAME WITH A CAMERA

out screwing it down to the stand, so that I could retreat with the camera in case of need, leaving the tripod to take its chance.

The elephants stood swaying and rocking gently within the confines of the spot they occupied, and, as Barnes remarked to me after the incident was over, one cow appeared to work herself gradually into a fury and coax her reluctant fellows to action: at all events they finally made up their minds to move out of cover towards us, down wind, and to face the intrusion.

It was one of the most imposing sights we had ever witnessed as they came striding forth from among the rush into the open, as shown in the illustrations.

Silently they spread out in a formation resembling a V, with the apex furthest from us, and the cow-elephant occupying the apex. Thus they gave us no possibility of escape without the use of our rifles.

The bulls, striding in advance of the female and her young, formed the flanks on either side, though at the outset they appeared somewhat hesitant, and seemed almost to the very last inclined to evade a collision with their human opponents.

The tension increased with every moment as the elephants moved deliberately forward in a seemingly unconcerned manner, except for the spreading of their ears, with their impressive fronts and bodies foreshortening at each stride of their advance.

A last warning from my companion made me prepare for timely action and was followed by the report of his rifle. The irritated cow had meanwhile moved up, in a quick amble, to within line of the two foremost giants, with her head poised



A VICTIM

WITH CAMERA AFTER ELEPHANTS

forward and tusks levelled at her antagonist. The three of them abreast and facing the camera presented the most formidable front we are ever likely to see. On the impact of the bullet in the chest, the cow stopped on the instant. She gave us the impression of a weighty body reeling back on colliding with a solid obstruction.

Picking up my 0.600 bore, I emptied both barrels in rapid succession on the biggest bull, which caused it to swerve off and collapse a short distance away. The cow appeared to be hard hit, and stood still for quite a while, until she ultimately subsided and succumbed through loss of blood.

To avoid further destruction our retreat was now clearly indicated, and we moved hastily a few dozen yards to a spot from which I took two photographs of the somewhat touching scene. Bewildered at first, the other elephants crowded aimlessly round the carcase of their fallen leader.

For a while the mournful scene remained unchanged, until they finally moved away in sedate and stately fashion. In their wake followed the hunched figure of an orphaned calf which vanished in the tall rushes.

GAIT OF THE AFRICAN ELEPHANT

Although the gait of the African elephant is normally a slow and quiet one, it is capable of accelerating its pace to a considerable degree for an animal of such ponderous proportions and ordinarily leisurely habits. It is by no means easy to arrive at a close approximation of its utmost speed, but we are to some extent in a position to estimate its maximum powers from accounts regarding the performances of Arab sword-

STALKING BIG GAME WITH A CAMERA

hunters or *aggageers* who in former days did their elephant hunting on horseback. These appear to have had some difficulty at times in keeping up with their fleeing quarry, presumably on account of the obstacles they were bound to encounter when pursuing the animals even over comparatively open ground. Whereas such hindrances as the uneven surface or the sandy nature of the soil and patches of scrub would be sufficient to hamper their horses, these would be no impediment to the progress of an elephant. On firm, even and open ground a huntsman, mounted on a fleet pony, would certainly have no difficulty in catching up with a fleeing elephant, since the maximum speed of an elephant can hardly be much over fifteen miles an hour. Selous often hunted his elephants on horseback in South Africa, and was always able to evade an attack except in the one instance quoted in Chapter IV, where his mishap was due to the unwillingness of his mount to respond to his spurs.

The ordinary walking pace of adult African elephants may be estimated at three to four miles an hour. Their steady travelling pace which the Boers of South Africa have aptly termed "*de lange stap*" (the long stride), and which the animals frequently employ when they have a definite destination in view, is generally reckoned at five to six miles an hour: at this pace full-grown individuals can travel without a break for many leagues, unless they are compelled, as in a case of a migrating herd, to adjust their pace and arrange halts in accordance with the needs of the young calves. Mildly disturbed individuals are apt to accelerate their long stride without breaking into an amble, requiring a steady jog-trot on the part of a man to keep up with them.

WITH CAMERA AFTER ELEPHANTS

Elephants have been known to travel off and on for nearly forty miles in one night, after they have been seriously disturbed. Ordinarily they are contented with making for a patch of neighbouring bush to evade their pursuers. In the Lorian Swamp it was noteworthy that no matter how severely a herd had been shaken the animals refused to break cover in the daytime, but chose to withdraw instead into the more inaccessible parts of the marsh, making their departure when darkness had set in. They would then cross the open margins and seek refuge among the thorn-scrub in the dry country north of the swamp, where I have known them to remain for three consecutive days without access to water, standing with their bodies above the low scrub and inevitably exposed to the scorching rays of the tropical sun. To such exposure they appear to be quite accustomed, and precisely in this particular characteristic they differ from their kind in the more bush-covered localities of the Masai Province south of the Uganda Railway, where elephants prefer to seek their coverts at day-break.

Like his Indian cousin, the African elephant shows the two common gaits, namely the *walk*, with the stride adjusted in accordance with its needs, and the *amble*, the latter in a fashion distinctly characteristic of the elephant among quadrupeds. The cushion-like pads, when the foot is lifted, bulge out and reduce to some extent the height from the ground of the slightly raised foot, giving the impression that the animal is moving in a *shuffling* amble. This mode of progression remains nevertheless an accelerated form of walk merely produced by a quicker succession of the same foot-impacts as in the *walk*.

STALKING BIG GAME WITH A CAMERA

When a herd is badly disturbed so as to cause a serious stampede, this quick shuffling amble is invariably adopted: the younger members appear, in such a case, to be travelling faster than the adults by reason of a quicker succession of the stride movements. Even on open ground the average sprinter will find it difficult to keep up with the animals at this pace beyond a few dozen yards. Although in emergency they may continue this amble for some distance they are most disinclined to carry on for more than a few hundred yards, after which they settle down to their "lange stap."

The speed with which the African elephant crashes through the bush leaves the hunter little chance for escape if he happens to be running in the animal's line of advance. It is possible to evade the stampeding individuals by a nimble side move: the Wandorobo and other native huntsmen are quite accomplished in such feats of agility.

From the foregoing experiences with the East African elephant, I am led to form the conclusion that once an animal has made up its mind to attack and destroy its human opponent it dispenses with the noisy demonstrations and any flourishing of its trunk, and comes silently to the attack with the tusks poised forward in the manner seen in two members of the advancing herd shown in Chapter XI. The stride, at close quarters, is accelerated to an amble by which the animal is capable of covering a dozen yards in less than a couple of seconds.

One need hardly mention that elephants are incapable of any motion resembling a gallop, or even a canter. It is possible that they can trot, but it is curious that even in the worst panic and stampede I have not seen them employ such a gait.

Any one who has seen elephants in their native freedom



SKULL, TUSKS AND HEAD-SKIN HAD TO BE CARRIED TO RAIL-HEAD

WITH CAMERA AFTER ELEPHANTS

can hardly fail to notice the silence with which these ponderous creatures can travel by reason of the structure of their feet. In an interesting article by Dr. C. Christy which appeared lately in the pages of the "Journal of the African Society," the reasons for this silent gait are described at length as follows:

"Much of the ability of the elephant to walk silently is due to the highly specialised structure of his foot. Though the plantar fascia and skin of the sole may be an inch in thickness, the great pedestal-like foot functions much like a soft rubber cushion. If one places the tips of one's fingers on the table with all the digits extended and widely separated, one has a fair representation of the bony structure of an elephant's foot, and one finds that beneath the palm is a considerable cavity. In the elephant this big cavity is completely filled with a mass of yellow-looking fat contained in a fibrous matrix, and forming a springy, elastic cushion, which, when the foot is raised, bulges out its plantar surface, but when in contact with the ground so adapts itself to every inequality that if a stick does crack beneath it the noise is muffled or not heard."

CONCLUSION

Many in the Colonies will realise that the perfection of cameras and the introduction of specialised modern lenses, working with large apertures for rapid work under unfavourable lighting conditions in the bush, now offer the keener sportsman a means of enjoying adventures with big game without the necessity of destroying a multitude of animals. This form of sport can lead to no undue persecution, even

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though the photographer is occasionally called upon to use a weapon of defence. It leads, in course of time, to a natural aversion from immoderate slaughter, is moreover as exhilarating, and affords just as much healthy recreation as the hunting of game with the rifle. Endless opportunities are at the same time presented to the observer who wishes to study at first hand the peculiarities of the larger creatures of the wilds that are commonly classed as dangerous.

In view of the interest now generally taken in the lives and habits of the greater game animals in every part of the world, it may perhaps not be out of place if I add, in a separate appendix, a few notes concerning the ancestry of the modern elephants and other matters bearing relation to these interesting mammals. These notes do not, any more than what has been written in the foregoing pages, presume to offer even a semblance of a complete record of the life history of the African elephant, for, although much has been written on the subject, the more we know of this splendid creature in its native wilds the more plainly does it appear that our present knowledge is still very limited. The few observations in this volume are therefore at the utmost to be regarded as offering some basis for future intimate investigation with regard to its ways and customs.

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PART I. NOTES ON ELEPHANTS

ANCESTRY OF MODERN ELEPHANTS

THE two existing species of elephant, the Asiatic and the African, are among the remnants of a host of gigantic prehistoric creatures that, during the Tertiary Period, roamed over all the great continents with the exception of Australia. Fossil remains of a large number of extinct species of *Elephas* and their immediate ancestors have been discovered and described by eminent scientists of the past, and their remains are still from time to time brought to light, offering material for elucidating the great range of evolution exhibited by these proboscidean mammals of bygone ages. The inconstancy and wide divergence of evolution of these mammals involve such a large variety of contemporaneous changes in the form of the skull and the dental characters that the subject still remains of the greatest interest and complexity.

The remarkable discoveries of Falconer and Cautley * in the Pliocene formations of the Siwalik Hills and other localities of N. W. India constitute the most important contribution to our knowledge of the chain of evolutionary stages in the

* H. Falconer and P. T. Cautley, "Fauna Antiqua Sivalensis," 1846.

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more primitive ancestors of the modern Indian elephant. A complete series of forms taken from a succession of Pliocene and Pleistocene * deposits in India are exhibited in the Natural History Museum, demonstrating the passage from the mastodons to the true elephants.

Dr. C. W. Andrews, † in conjunction with Mr. H. J. L. Beadnell, has traced the origin of the modern elephants even further back, to the Eocene and Lower Oligocene beds in Egypt. On the American continent the most ancient precursors of the elephants appear to have been found in Miocene beds in North America.‡

The discoveries of Andrews and Beadnell are of the greatest importance with regard to the precedence of ancestry in the various continents, and in addition they show that the most primitive among the ancestral forms possessed rudimentary canines in the skull. In consequence, the opinion may be held, until material evidence to the contrary can be produced, that the earliest proboscidean ancestors of the modern elephants originated on the African continent. Furthermore, this continent is likely to yield other productive discoveries to show the complete passage from these early forms to the modern

* The history of the earth is divided, according to geologists, into several great divisions of which the most recent is termed the *Cænozoic*. It comprises the *Tertiary*, or the age of the sands and clays deposited since the time of the chalk formations, and the *Quaternary*, the age of the later formed gravels and cave deposits. These are in turn subdivided into the following epochs:

QUATERNARY	{	Recent	TERTIARY	{	Pliocene
		Pleistocene			Miocene
					Oligocene
					Eocene

† C. W. Andrews' "Catalogue of the Tertiary Vertebrata of the Fayûm, Egypt," 1906, pp. 99-129, *Mærittherium*, and pp. 130-169, *Palæomastodon*.

‡ H. F. Osborn, "The Age of Mammals" (Macmillan, 1921), p. 299, *Trilophodon productus*.

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African elephant perhaps even so far as to offer in the future sufficient material to enable palæontologists to trace the various lines and periods of the migrations of these extinct mammals.

The relations between the most important species of mastodons which precede the epoch of the true elephants have been the subject of researches by the French palæontologist M. Boule, who divides them into two groups * according to well-marked differences in their dental characters. In North America remains of mastodons have been reported as found together with those of the mammoth,† which tends to show that mastodon forms have not only overlapped the range of distribution of the mammoths, but may in some regions have occurred contemporaneously with the latter during the last period of their existence.

The most recent forms of extinct elephants are the mammoths, and these are known to have been contemporaries of man in Western Europe during the Pleistocene Period. The extinction of the mammoth must have been a comparatively recent event, as is indicated by the condition of carcasses found preserved in the frozen tundras of Siberia.

Dr. C. W. Andrews in his "Guide to the Elephants (Recent and Fossil)" ‡ gives us a general survey of the facts already established in connection with the most important changes through which the *Proboscidea* have passed in the course of successive geological periods up to recent times. His description of the different changes commences with *Mærittherium*, a tapir-like mammal of the Middle Eocene, in which the

* K. A. von Zittel, "Grundzüge der Paläontologie," Vol. II, 1923; see diagram on p. 631.

† H. F. Osborn, "The Age of Mammals," 1921, p. 442.

‡ C. W. Andrews' "A Guide to the Elephants (Recent and Fossil)," Brit. Mus. (Nat. Hist.), 1922.

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canines of the upper jaw are of a comparatively rudimentary nature, and the mandible is devoid of such teeth. Then follows a stage represented by *Palæomastodon*, in which the canines have disappeared and in which, among other important changes, a reduction has taken place in the number of incisors.

An increase in the length of the pair of upper incisors has developed these into prominent tusks, and a gradual straightening of these originally downward curving tusks is observed in the next stages, which are represented by different species of *Tetrabelodon* and various forms of *Mastodon*. Following these a subsequent phase is represented by *Stegodon*, leading up to the progressive degrees in the development of *Elephas*, ancient, recent and modern, respectively.

The developments in the molars are shown to be of paramount importance, and at this juncture I may quote the following interesting passage relating to the dental characters of the mammoth on page 41 of Dr. Andrews' "Guide":—

"The Mammoth seems to represent the highest pitch of evolution attained in the Elephantidæ, being in some respects in advance even of the Indian Elephant. It is here that we meet with the greatest number of ridges in the molars. These teeth represent the culmination of the long series of changes described, all tending to increase the efficiency of the molars as grinding organs."

It is evident that the African elephant with its less specialised dental characters remains in this respect inferior to the Indian elephant. It has possibly in its line of descent been affected by important retarding influences as a consequence of the vast changes in the physical aspects of the African continent, and the mighty volcanic upheavals which are said to

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have caused the formation of the great Rift Valley from early Miocene. These same regions promise to reveal in the future some interesting facts relative to the more immediate ancestry of the modern African elephant.*

The changes in the development of the incisors and the successive modifications in the molars, bringing the latter to a higher degree of efficiency, which mark the progressive phases in the evolution of the *Elephantidæ* from their primitive proboscidean ancestors, point to the existence of subtle influences in nature that may yet, in a similar manner, bring about further modifications in the dental characters of the modern elephant. Adaptations of dental conformations to meet the demands of altered alimentary conditions such as would hardly arrest our attention within the course of a single generation may actually be in progress, perhaps to a degree sufficient to cause observable intergradations in the different existing types of elephant that now inhabit widely scattered regions of the African continent offering the most diverse food resources.

Close investigations in this direction may possibly lead to a more important basis for dividing the African species into categories than has so far been afforded by the classification into so-called geographical races according to differences in the shape of the animal's ear.

Although elephants occur in many countries, only two species are recognised, namely, the Asiatic elephant (*E. indicus* Linn.), with its representatives in India, Ceylon, Burma, Siam and Cochin China, the Malay Peninsula, Sumatra and Borneo (in the last named, probably not indigenous, but im-

* Bone beds discovered by Dr. H. Reck at the Oldowai Gorge in Tanganyika Territory have yielded remains of a Pliocene elephant belonging to the same species as *E. antiquus* of the late Pliocene and early Pleistocene of Europe.

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ported), and the African elephant (*E. africanus*) which ranges over an enormous area of the African continent.

The African species has been classified into four or five geographical races, of which three can be clearly distinguished from one another by the form of the ears.

These three distinct races are represented by the East African elephant (*E. africanus knochenhaueri*), commonly known in Kenya Colony as the Masai elephant, with a range extending from the northern part of Portuguese East Africa, through Tanganyika Territory, and Kenya Colony up to the border-regions of Abyssinia to the north, and the Congo to the west; secondly, the elephant inhabiting the Congo, the Gaboon and the Cameroons (*E. africanus cyclotis*), with, it is said, a dwarf Congo race termed *E. africanus fransseni*; thirdly, the Abyssinian elephant (*E. africanus oxyotis*), in Abyssinia proper and the Sudan.

The Cape elephant (*E. africanus capensis*), the range of which formerly extended over the whole of South Africa and Natal, but is now restricted to Rhodesia and the Mozambique, appears, from all accounts, to be closely allied to *E. africanus knochenhaueri*.

DIFFERENCES BETWEEN THE INDIAN AND THE AFRICAN SPECIES

The most striking differences in general appearance between the Indian and the African elephants were many years ago recorded by Sir Samuel Baker in his books on hunting this great quarry, in which he calls particular attention to the shape of the back. The back of the Indian elephant is convex in outline, whereas that of its African congener is decidedly

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the reverse, and the concavity of the latter behind the shoulders is joined with a peculiarity in the sudden rise of the spine above the hips, clearly marked in some of the illustrations in this volume that show individuals in profile. Furthermore, the African elephant possesses two finger-like processes on the tip of the trunk in contradistinction to the Asiatic elephant which has only one. The trunk of the African elephant is more coarsely ringed, and a material difference between the two species is at once noticeable in the shape of the forehead.

It is a well-known fact that the Indian elephant dislikes the sun and invariably retreats into shady forest after sunrise, whereas its African cousin shows much less aversion to the action of the tropical sun rays: this difference is particularly noticeable in the herds that inhabit the regions of the northern province of Kenya Colony and the desert-like localities of Abyssinia and the Sudan.

Baker also mentioned the readily observed fact that the African elephant is the more active; not only faster in its movements, but also more capable of enduring long marches, often after daybreak in the heat of the day.

The African elephant is, on an average, about one foot taller than the Indian, and carries far heavier ivory. Nine feet six inches is considered a very fine height for an Indian bull elephant, and ten feet an exception, whereas the corresponding heights for the African elephant would be from ten feet six inches to eleven feet. On rare occasions an African elephant is shot measuring a trifle over eleven feet at the shoulder, and such a specimen would now be considered exceptional and a notable record. The African elephant is a browser or tree-feeder to a much greater extent than its Asiatic congener: it

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appears to delight in breaking down trees, and the destruction caused by a herd during its temporary abode among the acacia patches is considerable.

In the Asiatic elephant the enamel-folds of the molar teeth * are numerous and compressed, the ears are of moderate size, and the animal possesses normally four (rarely five) toe-nails on the hind foot.

In the African the enamel-folds are fewer and more open, the ears are considerably larger, and, in adult bulls, may often attain a width of three feet and a half, and a depth of five feet six inches. The animal has only three toe-nails on the hind foot, and normally never more than four on the fore foot.

An adult African bull elephant, advancing in full charge, with its ears spread out, presents a more imposing front than the Indian: it would then measure from eight to nine feet from the tip of one ear to that of the other, in a straight line across the forehead, whereas, in the Indian elephant this front would amount to roughly five feet across the forehead; but what the latter loses in impressiveness by the lesser extent of the ears is, to a certain degree, made up by the difference in the shape of the head, which appears in proportion broader and more bulky than that of the African elephant. The specimens that are exhibited in the various zoölogical gardens convey a poor idea of the African elephant in its native wilds.

Sir Samuel Baker, in his admirable work the "Nile Tribu-

* The elephant's molars are composed of a number of laminæ, or plates, of dentine, coated with enamel, and each of these plates is joined at the base of the tooth. The substance called "cortical" between the laminæ serves as a cement. Owing to the difference in the hardness of the dentine and enamel, the latter substance is less subject to attrition and forms projecting edges on the wearing surface of the crown in the form of transverse loops. In the Asiatic elephant these loops appear flattened and wavy in outline, whereas in the African the figures are rhomb-shaped.

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taries of Abyssinia," puts forward the opinion that the African species, in the case of a serious attack, is far more dangerous than the Indian, as the forehead shot can never be trusted, and "therefore the hunter must await the charge with a conviction that his bullet will fail to kill."

There is no reason to believe that the African elephant, when captured young, will not prove quite as docile as the Indian, but it may prove less tractable when taken at the age at which the average Indian elephant is caught and tamed in the *kheddahs* (stockades) of the East.

At that age the females of the African species will doubtless prove less easy to capture by reason of the fact that they all normally carry well-developed tusks, and are, besides, more active in their movements and accustomed to depend less on the males for protection. Their tusks vary in length (over all measurement along the curve) from three feet to six feet in exceptional specimens, weighing anything from ten to thirty pounds apiece in the case of adult individuals. The rule, which is generally applicable to the Indian elephant, that the height of the animal, measured at the shoulders, is twice the circumference of the fore foot, within an inch or two, seems in no way to apply to the African species.

I have had occasion to measure specimens after they were shot whose fore foot circumference taped from four feet seven inches to four feet eight inches, with a shoulder height of a trifle over ten feet six inches. A case in point is a specimen which I secured in the Lorian Swamp (Northern Frontier District, Kenya Colony), the skull of which is exhibited in the Natural History Museum. The circumference of the fore foot did not exceed four feet eight inches, but the height of

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the animal was ten feet seven inches as near as it was possible to determine between two uprights.

On the other hand a specimen obtained from the neighbourhood of the Amala, in the southern part of Kenya Colony (the skull of which also reposes in the Natural History Museum), measured nearly ten feet six inches in height. The circumference of its fore foot is recorded in Rowland Ward's "Records of Big Game" (1922 edition) as sixty-four inches, which, as a matter of fact, is a couple of inches more than it measured when the animal was freshly killed: this may have been due to a slight extension in the preparation. The fore foot is almost circular, whereas the hind foot is oval in section and appears to the eye much smaller in circumference. Curiously enough, in the African elephant the hind pad has nearly the same circumference as the fore foot, there being perhaps a matter of an inch or two difference between them. It is merely accidental that in the two cases quoted the rule with regard to height should happen to apply to the Amala specimen with fair accuracy, whereas no such relation exists in the other; and, on the whole, from measurements of East African elephants which have come under my notice, the rule is invalid as applied to the African species.

VARIABLE FEATURES AMONG ELEPHANTS

Considering the extensive range of distribution of the African elephant and the diversity of the climate and physical aspects of the regions in which it occurs, it is only natural to expect certain slight variations of a minor character in the choice of haunts, the appearance, and the habits of the animal.

Even in representatives of one and the same race, in this

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instance the East African elephant, there are among local types slight variations sufficiently well marked to deserve mention, especially where they are permanently exposed to widely diverse physical conditions, as, for example, in the case of the inhabitants of the moister regions of the south of Kenya Colony and those roaming the arid localities and desert-like plains of the north.

A feature that struck me as particularly noticeable in the elephants inhabiting the arid regions of the north is the peculiarity in many adult specimens with regard to the upper margin of the ears, which becomes still more accentuated in individuals of advanced age. Some six inches of the upper margin of the ear folds back and hangs behind in a loose flap; this may be seen in several of the animals figuring in the illustrations to Chapter XI.

A. H. Neumann observed this same peculiarity in specimens he shot in the region of Lake Rudolph and on the Abyssinian borders of Kenya Colony.

I cannot say that this was brought to my notice, at any rate not to such a degree, in animals from the Amala and Mogor Rivers in the southern parts of the Colony, as may be gathered from the photographs appearing in the first few chapters of this volume.

In the northern regions of Kenya Colony elephants appear to show a more conspicuous indifference to the heat of the sun than those in the southern parts. Herds are at times met with among the parched scrub with their backs and heads entirely exposed throughout the day. The same may be noticed with herds that remain for days among the rush in the swamp at Lorian where the vegetation is barely eight feet in

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height during the severe droughts, and cannot therefore serve as any protection to the upper part of the animal's body. This fact would immediately strike anyone acquainted with the strong aversion shown by the Indian species to prolonged sun heat. It leads one to surmise that this continued exposure to the severe action of the sun is possibly made endurable owing to some modification in the structure of the tissues of the animal's skin.

The less moist diet, on which they mostly have to feed in arid localities, may have some bearing on their ability to endure such continued exposure, and may serve to regulate their body-temperature by altered internal production of heat. An adaptation of the dermal complexities to suit widely different climatic conditions in such a way as to cause a regulation of the body-temperature by increased radiation of the heat from the system may likewise contribute towards an explanation.

At this juncture I may perhaps add that my attention was drawn to the fact that several specimens secured in the region of the Lorian Swamp, all adult bulls of advanced age, displayed a coarse texture of the epidermis extending from the head over the dorsal ridge to the portion of the spinal region above the animal's hip. One specimen in particular showed distinct epidermal growths, wart-like in appearance, and in size varying in accordance with the spaces which are defined by the criss-cross lines of the corrugations of the skin. In texture they might be compared with the fibres of a close, stiff brush rising about an eighth of an inch above the level of the normal epidermis.

Such a modification might well afford the animal added protection to the spinal region of the body. Sand, earth and

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mud, which the animals frequently strew over their backs, also protect them, to a certain degree, against the excessive heat of the sun.

It is a well-known fact that the skin of both the living species of elephant, that of the African to a greater degree than the Asiatic, presents a shagreenous appearance on the surface. In certain parts of the body, especially in the case of adult individuals, this peculiarity becomes more pronounced with age, and the small nodules of the corneous layer of the epidermis assume wart-like prominences which may exceed a quarter of an inch in thickness. It is frequently suggested that such a modification of the epidermis might originally have been the result of the action of irritants which are considered as inseparable from the environments in which elephants live by choice. This may be so; in this particular instance, however, the very accentuated wartiness on the back of the animal can hardly be ascribed to such causes since there can here be no question of a permanent forest habitat or of rasping brushwood sufficiently high to affect the spinal region. The following suggested explanation may perhaps offer a solution of the problem.

In the new-born elephant it will be noticed that the skin is smooth, and the epidermis, although granular, is entirely devoid of this nodulous appearance, which develops gradually with the growth of the young elephant, becomes pronounced in adult individuals and most conspicuous in animals of advanced age, forming as it were definite warts: the skin furthermore becomes wrinkled, as may be observed in some of the close-up views of the African elephant contained in this volume. In some regions of the body these wart-like prominences of the

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corneous layer appear disintegrated into a close fibrous texture, which suggests a cracking of the outer layer of the epidermis, owing possibly to an insufficient supply or permeation of fatty ingredients which appear essential to keep the outer layer of the epidermis intact and prevent a desiccation. Such, in the absence of a fur coat, is presumably more likely to occur with animals that possess neither sebaceous glands nor sweat glands, and in the elephant both these cutaneous glands are known to be wanting.

Once formed, these peculiar wart-like formations of the corneous layer of the epidermis may well afford an increased protection in mitigating the severity of the action of the tropical sun-rays on the dermis.

Hunters who have spent much time in the tropical forests of Central Africa have observed certain differences between the skin of the elephants inhabiting the humid and frequently rain-soaked forests of the Ituri and the skin of those which inhabit the arid scrub, or even the bush regions of the eastern part of the continent. It is hardly surprising that this should be so: whereas the skin of the former animals is apt to remain black and supple by reason of the permanently humid environment, that of the latter tends not only to assume a lighter colour—a blackish grey—but is also less pliable and apt to show a distinctly horny surface with a tendency to wartiness with advancing age. Similar differences may be noticed to a greater or lesser degree between the Asiatic species and the African species of elephant as a whole.

* * * * *

Large herds of elephants, frequently two or three hundred strong, will travel at times in one single body during their

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periodic migrations, breaking up into small parties the moment they reach their new abode, yet always maintaining close intercommunication by their surprising instinct and their remarkably keen powers of scent.

This wonderful intercommunication between the scattered parties of the herd, and likewise among the straying individuals of the same party, is naturally effected by their keen scent, coupled with the strong effluvium which they emit all over the body; the latter enables them to remain in touch for several miles down wind. Like many other quadrupeds the elephant possesses scent glands on the side of the face: these are said to enlarge during the breeding season, giving off a fatty secretion of a rancid or musky odour. Both sexes appear to have these odoriferous glands, which, irrespective of what other use they are to the animal, might be of some assistance for communicating to one another their recent presence in the neighbourhood, as when they rub the side of their heads against some trunk or tree-bark they are apt to leave behind a trace of the secretion which possibly serves for individual recognition. Whether this is accidental or intentional it is difficult to decide.

At the first signs of a serious disturbance the scattered members of a party or group will usually collect together and remain in closer touch with the other groups until the evening sets in, when they all foregather and leave cover, and the whole troop begins its trek to some distant abode. Migrations of herds are said to occur fairly regularly between the Lorian and Mount Marsabit across a stretch of waterless country over a hundred miles in extent, and this distance apparently they can travel in two days if necessary.

As with the Indian elephant, there is a great diversity

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among the representatives of the African species, not only with regard to height and the weight of ivory carried, but also in the physical development, disposition and temperament of the animals.

In the same herd there may often be found members of marked superiority in carriage, of a proportionately heavier build, displaying a more massive chest, with shorter, more thick-set neck and a trunk broader at the base and heavier throughout. Their movements nevertheless show greater activity and convey an impression of a more perfect muscular physique.

Other individuals occurring among the herd will be leaner in build, lanky in general appearance, with a pronounced dorsal ridge, and the trunk comparatively thinner at the base; these are, as a rule, inferior in activity, but less restful in disposition, and less stately in their pace. Although in many ways representing an inferior type, these lanky members often carry more ivory than the former.

It is perhaps worth while to mention, as an instance of the variations that occur incessantly in nature, the occasional differences in the ratio between the height of the elephant and the length of its trunk, measured from the eye to the tip, and again in the ratio between height and the circumference of the animal's foot, as observed in certain specimens which I secured. The latter ratio varies in individuals from the same locality to a degree so marked that it can hardly fail to attract the investigator's attention. Slight variations in the form of African elephant skulls are occasionally detected apart from those differences that are exhibited in the two sexes. Striking differences also occur between the skulls of so-called *mucknas*

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(Indian male elephants with relatively rudimentary tusks) and those of normal males.

INDIVIDUAL DEVELOPMENT AND ANCESTRAL EVOLUTION

The gradual development of the baby elephant's proboscis from a comparatively short, prehensile snout at birth to the normal adult proportions of the long and flexible trunk is one of the most interesting phenomena presented among the changes undergone by the animal in the process of its growth. The stages of this development to some extent correspond with the most important changes through which this prehensile organ passed in its ancestors of the Tertiary era.

In addition to this repetition of the ancestral modifications of the trunk in the living animals, other remarkable analogies may be detected, as, for instance, between the cranial evolution of its ancestors and the similar progressive developments that take place in the skull of the modern creature from its foetal to its adult state. The most important among these changes are not confined to the pre-natal period alone; there are some that are manifest in the earliest stages of the animal's separate existence.

In the foetal elephant * the sutures of the cranium become obliterated as time proceeds, and its original oblong shape is considerably disguised in the adult individual by an enormous development of air-chambers between the walls of the skull. These modifications are clearly necessary in order to provide a larger surface for the attachment of the muscles to support

* Huxley's "Lectures and Lay Sermons—The Skulls of Mammals" (Dent & Sons, 1913), p. 256.

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the head, which becomes increasingly heavier as the animal grows to maturity. A curious parallelism is apparent between such changes, occurring within the life period of the elephant, and those that are shown through the primitive stages of its ancestors, which present precisely the same outline of evolution in the successive forms: *Mærittherium*, *Palæomastodon*, *Tetralodon*.*

In still another direction a most interesting analogy is indicated as, for instance, between the progressive complexities of the dental features of the young elephant during the period of its growth and those pertaining to the successive forms of mastodon and extinct *Elephantidæ*.

Whereas in the young individual a numerical increase in the laminae and transverse ridges of the molars takes place with the appearance of each new tooth, similar conformations in the dental characters are evinced by those ancestral forms which mark the passage from the mastodons to the true elephants.

An accumulation of evolutionary changes in these ancestral types is thus, in part at least, reflected through the growth of each individual descendant. Incidentally not only can these manifestations be observed with regard to the *Proboscidea*, but similar striking analogies are also found, in varying degrees of completeness, in many other contemporary creatures. With the discovery of an increasing number of extinct animal forms these phenomena have become so arresting that the existence of rigid laws governing such corresponding changes is a matter beyond mere presumption.

The researches of palæontologists have not only resulted

* C. W. Andrews' "A Guide to the Elephants (Recent and Fossil)," Brit. Mus. (Nat. Hist.), 1922, pp. 14-30.

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in the establishment of such evidence as was needed to prove the existence of a wonderful range of evolution in prehistoric animals, but have besides advanced so far as to demonstrate from fossil remains certain definite lines of progressive changes in extinct faunas. One of the most interesting results of these researches has led to the conception of analogies between the individual development of an organised being (ontogeny) and the evolution, or genealogical history, of a race or species (phylogeny). Progress in anatomy, aided at the present day by the resources of radiography, brings the study of evolution in embryos within the scope of direct observation.

Hereditary developments indicate the existence of certain laws that seem to guide the organism of a living creature into a definite series of pre-natal and subsequent mutations through which it must pass to attain its mature form. These mutations evidently correspond with the essential ancestral forms, and on the whole present an abbreviated repetition of an ancestral evolution; the abbreviation becomes more abrupt in the case of the highest and most specialised creatures. A reason for the omission in the development of an individual of what appears to be the less consequential stages of its ancestral evolution may possibly be that a passage through all the successive forms would demand from the organism such expenditure of energy as perhaps to affect, especially in the case of highly specialised creatures, the individual's inherent powers of development. A decline in the adaptive vitality would necessarily endanger the continuance of the race or species.

Such natural fatigue in the developmental powers has probably occurred, in a genealogical sense, among many of the

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largest forms of extinct mammalia that were of comparatively highly specialised development.

A gradual racial exhaustion, partly the result of excessive bodily size combined with an advanced complexity of the structural and functional characters, was possibly the essential cause of extinction of the various species of Pleistocene *Elephas*, added to which the effects, at this stage, of drastic changes in the life conditions must also have had their fatal influences. The two modern species appear to be descendants from lines that have accidentally met with less adverse conditions, and, of the two, the Asiatic species appears to have been the more favoured in its evolution, judging by the superior specialisation of some of its characters. Whether this more advanced specialisation has occurred at the expense of its constitutional adaptability remains to be seen.

Fossil remains in different localities, associated with most primitive stone implements of ancient man, have shown that the effect of their hunting of the various species of Pleistocene *Elephas* was comparatively unimportant. And at a later point it may perhaps be interesting to consider the possible methods adopted by hunters of the Palæolithic age.

In what direction the continuous processes of evolution may yet alter the characteristics and appearance of the larger mammals generally, and of the modern *Elephas* in particular, is a question that offers some ground for speculation, presupposing that they are guarded against extinction resulting from the rapid progress of civilisation.

The existence of a smaller type of the West African elephant (*E. africanus cyclotis*) in parts of the Congo suggests one possible side-line of evolution in the distant future, namely

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a decline of some of the larger mammals towards similar diminutive forms of remote ages. The type is not as yet ascertained to be a definite dwarf form in the same sense as the pigmy hippopotamus of Liberia (*Chæropsis liberiensis*) is distinct from the larger and common *H. amphibius*.

Pigmy forms of the hippopotamus are known to have existed in former ages, such as the one found in the Pleistocene deposits of Madagascar, of which a skeleton is exhibited in the American Museum of Natural History.

The smaller form of the West African elephant seems to resemble the normal *E. africanus cyclotis* too closely in general appearance to be regarded as pertaining to a separate line of descent. But when, as it may be in the near future, it has been conclusively ascertained that these smaller representatives exist in separate and distinct herds, and in no way associate with the larger kind, this would be suggestive of a transition to a future permanent form.

Under present conditions, however, it is more likely that such a tentative line of descent towards a diminutive form will prove of no avail for the preservation of the species; the smaller type of elephant may thus remain in limited numbers and is in consequence apt to become extinct much sooner than the larger and common races.

In a similar manner it would not be unreasonable to conjecture that exceptionally large individuals among the ancestral forms of the modern elephants, as indicated by fossil remains of allied species in Europe and Africa, represent tentative stages in an evolution directed towards the preservation of the species. Some of these are known to have attained a height of close on fifteen feet, as is shown by a skeleton found

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at Upnor, near Rochester. A variety of this species (*E. antiquus recki*), from East Africa, likewise attained gigantic proportions. On the other hand, skulls and other fossil remains of dwarfed forms * resembling *E. antiquus* have been discovered on some of the islands in the Mediterranean, as, for instance, in Malta (*E. melitensis*), Cyprus, Crete and Sicily. A small form, named after Falconer (*E. falconeri*), is stated to have stood not more than about three feet at the shoulder. In this connection the reader may be referred to Dr. C. W. Andrews' remarkably comprehensive "Guide," already referred to.

It would appear that during the period in which the *Proboscidea* reached their most flourishing condition, as far as the number of kinds and their geographical distribution are concerned, there existed, contemporaneously, species and varieties of widely different height. Their remains also exhibit a great diversity of contemporaneous changes in the skull, tusks and complexity of the molars, and show inconstancies of evolution as the result of a remarkable flexibility inherent in the constitution of these mammals.

In modern times a notable decline in the stature of exceptionally fine representatives of the African elephant seems possible from accounts of old-time explorers and hunters, and such reports would undoubtedly be of interest if authentic measurements had been recorded. They spoke of specimens of the African elephant as reaching twelve feet at the shoulder, whereas at the present day the suggestion of even eleven feet calls for strict checking of the measurements, while due allow-

* H. Pohlig, "Eine Elephantenhöhle Siciliens und der erste Nachweis des Cranialdomes von *Elephas antiquus*," 1893.

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ance should be made for the fact that the dimensions are taken from the limp body of the dead animal and can hardly represent the actual height of the living individual. Such a decline in stature might in this case have been brought about as a result of the diminution of the herds and the consequently more intensive interbreeding of the members. In this connection it is interesting to note the following extract from one of Prof. O. Abel's important works:*

"Previous to the extinction of the mammoth in Europe unmistakable signs of its degeneration have become perceptible; the last mammoths were much smaller than those of former epochs of the Great Ice Age; the most recent and last representatives have even been termed dwarf forms by W. Soergel on the evidence of remains from among the gravels of Lake Constance, dating from the most recent glaciation period."

BREEDING HABITS AND AGE OF ELEPHANTS

Observations on the breeding habits of the African elephant in its native wilds have, as far as I am aware of, not been recorded with definite certainty by white hunters. Wandorobo in East Africa assert that they have occasionally witnessed connection taking place between the two sexes, when the female stood to receive the male in the manner common to most quadrupeds. Among large herds I have frequently observed members making advances to one another.

The period of gestation is generally accepted as between eighteen months and two years. Cow elephants may frequently be seen accompanied by two calves of varying height, differing, I should say, roughly, from three to five years in

* O. Abel, "Die vorzeitlichen Säugetiere," 1914, p. 210.

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their age; on rarer occasions, three calves are seen, in which case one may be a sub-adult member of the family.

In one of the foregoing illustrations showing a family group of elephants a baby is depicted which, in proportion to the adult, could not have stood more than three feet at the utmost, and from this it would be reasonable to conjecture that a newly-born African elephant in its native state would be nearer two feet in height. The young suck with the mouth, and not with the trunk, which is short and but little flexible.

From what is known of the domesticated Indian elephant, its life period is not regarded as extending much beyond that of a normal human being. Some individuals are said to have exceeded eighty years. Their earliest breeding age is looked upon in India as being in the vicinity of twenty.

From a comparison of wild elephants of the Orissa Jungles of southern central India with captive specimens of the same area, I was struck with the uncommonly sleek condition of the former: the belief that they attain a greater age in their native state of freedom is quite comprehensible: it is very likely that the age of African elephants varies similarly. Whereas captive Indian elephants are considered, from a commercial point of view, aged animals at fifty, African bull elephants at that period of life may be regarded as having reached the height of their physical perfection.

The report that African elephants of advanced old age seek certain localities in which to find their final resting-place is quite credible, as they would instinctively prefer to spend their last days in their most favoured haunts. It is a well-known fact that bulls of advanced age will segregate themselves and keep entirely away from the herd, but this can

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hardly be said to be the case with the cows; it is not impossible that the latter do ultimately leave the herd when they feel that their end in life is approaching. I have on several occasions met with old females among a herd, but have not seen a single female entirely detached from a herd.

The rumour of the existence of "elephant cemeteries" in certain localities appears to have no foundation, and from what I gather such spots, in which accumulated remains have been found in open country, often presented indications that the animals had not met their end from natural causes, but had been surprised and killed by natives illicitly provided with modern weapons, or by white hunters: the tusks from such remains are invariably extracted.

Wounded elephants prefer to seek their end in the denser and more inaccessible parts of the bush, and it is consequently probable that they do this likewise in the event of approaching death from natural causes.

In such a case, their carcasses are apt to be promptly devoured by scavengers, leopards and hyænas in particular in East Africa, and the vegetation sprouting round the skull and bones effectively conceals the remains from casual wanderers. Tusks are frequently brought in for reward at provincial headquarters. Doubtless the greater majority of these are obtained by illicit means, but a few are quite likely to have been extracted from skulls of individuals that have met with a natural death in isolated bush localities.

The age of elephants can be arrived at with a reasonably accurate approximation from the evidence presented by their teeth. In addition to the pair of tusks (incisors) in the upper jaw they possess only molars, or grinders. The dentition of the

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adult elephant conforms with the formula: $I.\frac{1}{6}$, $C.\frac{0}{6}$, $Pm.\frac{0}{6}$, $M.\frac{3}{3}$. The normal number of successive "milk molars" in both the modern species is reckoned to be three, and that of the true molars is invariably three. The milk teeth are not replaced by a vertical succession of pre-molars from beneath, but each tooth is in time displaced by the protrusion of its successor in the jaws from behind forwards, causing the lamellar portions of the worn molar to crumble off from in front of the jaw. There is either only one single tooth in wear in each of the jaw halves or two portions of successive teeth, when the new molar is about to take the place of the worn one.

The lamellæ composing each grinder, and correspondingly the transverse ridges of the crown, continue to increase in number with each successive tooth, and this succession, as first observed and described by Corse in 1799,* occurs in the following manner with the Indian elephant: the first milk molar cuts the gum eight to ten days after birth, is well out in six weeks, and is composed of four plates; the second is completely in use at two years, and consists of eight to nine plates; the third serves the period between the second and sixth year, and has twelve to thirteen plates; the fourth is in use between the sixth and tenth year, and consists of about fifteen plates.

Corse showed furthermore that the Indian elephant has "milk" tushes which cut the gum when the calf is about six months old and drop out between the first and second year. The tusks grow from a persistent pulp which forms new ivory.

According to later information the first true molar is said to come into operation at the age of fifteen,† and we have

* See H. Falconer's "Palæontological Memoirs," Vol. I, 1868, p. 48.

† K. A. v. Zittel, "Grundzüge der Paläontologie," Vol. II, 1923, p. 632.

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from this same source the ridge formula for the two existing species of elephant as follows, for the milk molars (M.M.) and the true molars (M.):

	M.M. ₁	M.M. ₂	M.M. ₃	M. ₁	M. ₂	M. ₃
African elephant	$\frac{3}{3}$	$\frac{6}{6}$	$\frac{7}{7}$	$\frac{7}{7}$	$\frac{8}{8-9}$	$\frac{10}{11}$
Indian elephant	$\frac{4}{4}$	$\frac{8}{8}$	$\frac{12}{12}$	$\frac{12-14}{12-14}$	$\frac{16-18}{16-18}$	$\frac{24}{24-27}$

It is therefore possible to estimate the age of young and adult elephants by distinguishing the type of milk tooth or true molar in use at the time according to the above table of the ridges on the crowns and also from the indications of partial or complete wear of the crowns. In very old individuals the ridges on the grinding surface are nearly worn even.

Rough-and-ready estimates of the age of elephants according to their stature and general appearance can obviously be of no value. Some mahouts in India profess to be able to arrive at the approximate age of the Indian elephant from the condition of the lappet, outline and folds of the animal's ear, but this should be accepted with reserve. On the other hand, individuals of advanced old age are readily distinguished by the emaciated condition of their trunk.

MENTAL FACULTIES AND DISPOSITION OF THE EAST AFRICAN ELEPHANT

The male East African elephant appears to me, on the whole, more even-tempered and consistent in its behaviour than the females, even when the latter are not accompanied by young ones. The females among a herd are often restless, inclined to be suspicious and on the alert. Those that are not hampered with young ones frequently seem to take it upon themselves to keep watch over the herd of loitering and feeding animals, and

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are, as a rule, quick to convey a warning signal in the event of any intrusion or even on the appearance of a strange object moving in their vicinity. Their zeal may occasionally prompt them to a semblance of an attack without the least provocation and with a most unexpected suddenness highly disconcerting to the observer. Once apprehensive of danger the average individual exhibits a highly-strung and nervous disposition hardly to be looked for in a creature of such formidable proportions: its eagerness to move out of the way is clearly manifested by a perturbed state of mind, expressed by agitated actions that appear quite inconsistent with the high degree of intelligence popularly ascribed to these animals.

It is said that the elephant's brain is of a low type, but if the animal is judged solely by its performances in captivity its sagacity would cause one to believe that it is endowed with considerable powers of reasoning, and, generally, that it possesses a remarkable standard of intelligence. Most tricks of performing elephants are foreign to their habits in the wilds, and can scarcely be regarded as instinctive or due to directly inherited tendencies. They are more likely to be the outcome of the animal's powers of imitation, and of its possessing a certain degree of memory, which are faculties that are natural to its gregarious mode of existence.

The movements and actions of the performing elephant, carried out promptly at the trainer's word of command, are often executed in such a casual and unconcerned manner that it would be difficult to imagine them as the result of deliberate reasoning.

Far from accepting the existence of the rare intellectual power with which the animal is generally credited, I should be

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inclined rather to attribute this successful training to an extraordinary degree of docility and to a natural obedience, which are likewise qualities in accordance with the elephant's gregarious mode of living.

Attention is a faculty that is easily aroused in the wild elephant, as may be gathered from several of the close-up views among the illustrations. This faculty, besides the qualities mentioned above, is known to be of material assistance in the taming and training of wild animals.

Curiosity and wonder are expressed more by actions, poses and attitudes than by any display of facial expressions. Even anger is hardly expressed in the elephant's bland and immobile features, and this is what makes it so difficult to guess, at any given instant, the precise mood of the animal. With the carnivorous animals, on the contrary, their mobile facial muscles express various shades of emotion, some of which are quite unmistakable. Hesitation is occasionally betrayed in the wild elephant's actions by a repeated inward curling and unfurling of the lower part of the trunk which, in a face to face encounter, serves as a warning to the observer that the animal is making up its mind how to deal with the unwelcome intrusion.

The power of erecting the large shell of the ear is doubtless of great service to the elephant for gauging sounds. It may on occasions be noticed that the ears are partly extended when the animal is intently listening to a suspicious sound. Immediately the direction of the sound is ascertained it brings them suddenly to full cock, with a simultaneous swing of its massive body, to enable it to face the direction of the sound and gauge the proximity of its origin. The necessity under

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which it lies to follow up the turn of its head with a corresponding cumbrous movement of the whole body may well account for the elephant's exaggeratedly apprehensive feelings and nervousness. It is invariably suspicious of moving objects in its rear to such a degree that its behaviour is at times decidedly comical.

Changes in the temper of the normal East African elephant are, as a rule, gradual, unless it suddenly finds, or suspects, itself endangered, when a confusion of mind, coupled with a nervous apprehension of danger, is largely responsible for any unreasoning action or swift change in its mood. The same may after all apply, in a greater or lesser degree, to all the larger game animals that are classed as dangerous.

Intense surprise and apprehension are emotions which can become visibly marked; they are not only shown by the momentary poise of the head and trunk, the extended ears, and the animal's general attitude, but are also often expressed by a startled protrusion of the eye—as in the individual in the first illustration in Chapter III. This portrait of the African elephant in its native haunts is one of the few I happened to secure in which the animal's mixed feelings can to some degree be guessed from its features. I have here and there emphasized certain observations in regard to the attitude of the elephant's ear, which may in many instances express its momentary disposition and to some degree foretell the possible behaviour of the animal when he is facing the operator. In the absence of marked expression in the blank features it is of paramount importance for the safety of the stalker to observe such indications, which are apt to be overlooked as seemingly of no importance.

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It may therefore perhaps not be superfluous to enumerate here the various poises of the ear in conjunction with the animal's mental attitude as seized in the photographs.

To begin with the individual shown in the next illustration in Chapter III, we find it stolidly regarding the intruder; its curiosity has been mildly aroused and its expression is one of expectation. The animal's ears are partly cocked and ready to be extended at any moment with increasing interest and attention.

In the third photograph of the same chapter the same individual is seen with its ears extended, a sign of growing interest and attention. The movement of its foreleg and the partly retracted trunk suggests not only indecision but also, apparently, active deliberation.

The further developments in its behaviour are shown in the next illustration of the chapter. The attitude of the individual on the extreme right is less agreeable to the stalker. The animal's ears are drawn back in a peculiar fashion with its head elevated; it may show malignant intentions on the least provocation. The camera man is in such a case well-advised to move away from its vicinity unless he is prepared to shoot.

In the fourth illustration in Chapter XI we see an animal profoundly interested in the intruders. Its ears are fully extended and the whole poise of the elephant expresses concentrated attention. In such a case one can with fair certainty expect certain changes to occur in the animal's attitude and in the poise of the ear before it is finally dangerous. On the other hand the cow-elephant on the extreme left of the group, with its head elevated, its trunk retracted, and the ears somewhat

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set back, may be expected to become more inquisitive and nasty on the least provocation.

What the African elephant looks like when he is suddenly confronted by the stalker is shown in the first illustration of Chapter III. The relation between other attitudes and poses, and the elephant's behaviour, temperament and intentions can be studied from the numerous photographs in this volume. But it must be borne in mind that such inferences remain at all times somewhat speculative. Although I have found it sufficient for my purpose to base my photographic experiences with the East African elephant on these observations one is of course not justified in being too confident in such matters until again and again we have convinced ourselves of the animal's behaviour following upon the various attitudes. Needless to say such deductions can only apply to normal animals since the knowledge of wounds must naturally cause the wild animals to become savage and consequently more risky for the photographer.

It is the study of such emotional expressions that will lead to a more intimate knowledge of the mental faculties of wild animals. The reader may discover in some of the other illustrations, not merely those of elephants, various facial indications that have some bearing on this particular point.

Psychological inquiries of this nature must, by reason of the uncertainty of the animal's actions and behaviour, at first be somewhat speculative for the experimenter until sufficient knowledge has been gained to enable him to carry out his operations with a greater degree of safety. Once their disposition and probable behaviour under varied circumstances have been carefully studied and ascertained by repeated trials there

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will, in due course, be less likelihood of the observers of these wild creatures being placed in embarrassing situations with a possibility of injury.

The fact that even the emotional expressions of the larger game animals in their untrammelled state can nowadays be recorded, often with comparative ease, opens up a fresh field for investigations, and may lead to a less timid and hostile relation between man and those of his fellow creatures popularly and collectively known as dangerous game.

The confinement of the larger animals in zoölogical gardens must necessarily affect their characters to some extent, and in their state of permanent captivity they can hardly be expected to display the more vigorous expressions of their emotions as they sometimes do when at large and in their natural state of freedom. Although such institutions are of the greatest interest to the general public they can hardly appeal to the same extent to those who have been fortunate enough to make the acquaintance of these animals in their native haunts.

Elephants are essentially gregarious in their habits, and therefore recognise and obey instinctively the actions of a leader for the well disciplined and efficient organisation of the community. The herd usually accept as their leader a female who is more self-reliant but not necessarily more impressive than the rest.

Herds that are harassed by human intruders may occasionally decide to make a stand, while some of the bolder members, more frequently the cows in charge of their young, will endeavour to drive away their pursuers by actions such as are calculated to deter them from being a further nuisance.

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Rarely does a herd attack in concert and with the deliberate intention of destroying the intruders; they instinctively prefer a silent departure. It would appear, in cases when a concerted attack is decided upon, that the particular leader is one possessing an unusually masterful character, such as to command strict obedience from its timid followers. Their gregarious instincts are clearly manifested in the event of an alarm, when the scattered individuals concentrate with remarkable rapidity and silence. There are in every large herd individuals, mostly bulls of a more or less independent disposition, that will stray some distance away from their fellows and feed apart, but evidently without losing touch with the others, and rejoin them the moment a departure from the locality is contemplated by the herd.

Rarely, and only in the case of very old bulls, do they prefer a permanent and solitary aloofness from the herd. Males of breeding age may often absent themselves in company with other male members of a similar age and return periodically to consort with the herd, each adult male associating with a party of females and their families. Such bulls are generally of a more advanced age and physique than the minor ones that are permanently attached to these parties, so that they are usually tacitly admitted by the younger bulls without dispute as to their right to assume their place during the periodic associations with the cows. Whereas it is said that among Indian elephants it is rare to find more than one adult bull with a herd of females and their young, on account of the larger bulls expelling the lesser and weaker ones, it is not uncommon, in East Africa, to find several bulls of a similar breeding age associating with the same herd at the same

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time: among these, nevertheless, the strongest is tacitly acknowledged to be master, but he appears to assert his supremacy on rare occasions, and shows a marked tolerance that seems less common in the disposition of the herd-bulls of the Indian species. This is possibly due to the fact that the African elephant has for generations been subjected to pursuit by ivory traders and hunters, and consequently the instinct for the preservation of the race may dominate the law of battle for supremacy.

The African cow-elephants have impressed me as being on the whole possessed of a less timid, more independent and assertive disposition than the Indian individuals of the same sex.

GEOGRAPHICAL DISTRIBUTION OF THE ELEPHANT IN KENYA COLONY

From the numerous photographs in this volume some of my readers are likely to infer that elephants abound in East Africa. On the contrary, it is possible to travel through the length and breadth of the colony without seeing a trace of elephants unless one is specially seeking for them, since many large tracts of the country are apparently unsuited to their requirements.

In the southern part of Kenya Colony the haunts of elephants are mostly such as are shown in the illustrations to the first few chapters of this volume, and in many of these the scenery presents the typical bush most suited to the animal. Avoiding as a rule close tree forest, they prefer the bush-like forest, consisting of a tangle of creeper-like stems covered

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with dense foliage—on the whole little, if at all, higher than the elephants' backs. The brushing of the rasping branches against the animal's tough hide appears to afford it the desired contentment in its surroundings.

These coverts are scattered, frequently at very wide intervals, with intervening stretches of undulating veld or extensive prairie-like plains. Patches of covert of this nature are situated in moist depressions and in valleys along the banks of rivers such as the Amala and the Mogor (Gori).

From the rapid devastation of these chosen resorts in the course of a few weeks' sojourn of a mixed herd of elephants, it naturally follows that they must often change their feeding ground, and traverse the open veld tracts between their favourite haunts; well-beaten elephant-paths show the lines of their periodic migrations, and such migrations are usually carried out at night in the most unobtrusive manner, so much so that one may hear their noises in camp one evening and the next morning find the elusive giants departed, and that particular stretch of bush devoid of a single individual.

From the numerous elephant tracks that lead from the banks of the Amala River across the broken hill ranges and boulder-strewn escarpments in the neighbourhood, it would appear that they are fond of climbing to the top of hills near their chosen abodes, but they do so mostly after dusk.

In the lower countries north of the Northern Guaso Nyiro, which are arid and desert-like, the elephant is usually found among the scattered acacia groves and sometimes among the parched, thorny scrub of the *nyika*. The occasional palm groves, bordering the sandy river beds, are also favourite haunts, besides the more wooded regions of Mount Marsabit

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and other extinct volcanoes of the Northern Frontier District of Kenya Colony.

On the Amala and Mogor Rivers I have found the herds particularly noisy from the time they retreat into covert at daybreak until about eight in the morning, and occasionally even later. During these few hours they appear to do most of their feeding, as may be judged by the varied sounds of the active younger members, the loud swishing noises of broken branches torn through the dense foliage—with an occasional snap of a breaking tree, or the crash of a falling stem. After eight their activities seem to subside, when they will stand about in their covert in listless fashion, dozing or lazily feeding, and quietness appears to reign after ten. From noon to three are evidently their principal hours for rest, apart from intermittent snatches of sleep while they loiter about and feed with less earnestness of purpose.

Activities begin again after three in the afternoon, when the animals move about towards the fringes of their coverts, and sometimes show themselves in the open, where they wander, after dusk, feeding leisurely as they move along. From their habitual silence in the small hours of the night until four in the morning it would seem that they indulge in further snatches of sleep during these hours.

The East African elephant occurs in scattered localities, of greatly varying climatic conditions, in the low-lying countries as well as the higher altitudes of the mountains of Kenya and Kilimanjaro. In these mountainous areas they show a partiality for bamboo forests as their more or less permanent abode. The numerical strength of the herds varies largely with the food resources of the localities which they frequent.

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Elephants in Kenya Colony are found more or less permanently on the Amala and Mogor (Gori) Rivers, where they show fairly regular habits, in parts of the Kisi and Kavirondo countries, in the Mau, Kikuyu, and Nandi forests, on Mounts Kenya and Kilimanjaro, and in scattered localities of the coastal region of the Colony.

Further north, beyond the Guaso Nyiro, herds are mostly found in more or less permanent abodes in the region north of Mount Elgon, on the Turkwell River, extending to the country round Lake Rudolph.

The Lorogi and Matthews Ranges often harbour herds. Mount Marsabit is a well-known abode, and the Lorian Swamp is also frequently their home. As in the case of its extinct ancestors the marked adaptability of the constitution of the African elephant is shown by its vast geographical range of habitat.

On the whole the elephant of Kenya Colony cannot be regarded as strictly a forest dweller in the same sense as the elephants found in the primeval tree-forests of the Congo and other parts of Western and Central Africa. The former is more an inhabitant of the bush or bush-like forests in the southern districts of the Colony, and a denizen of the acacia groves and the arid scrub plains of the Northern Frontier District, Somaliland and Abyssinia.

Similar diversities in the nature of their habitats have no doubt also existed among the various species of Pleistocene *Elephas*. On the evidence of fossil flora and from the geological indications of localities in which their remains have been discovered, some appear to have preferred the primeval forests as their permanent abode, as in the case of *E. antiquus*:

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others chose the more open regions as their habitat, among which the mammoth (*E. primigenius*) may be cited as the type inhabiting the tundras associated with the colder climates. Concerning the latter it remains a matter of interest to know whether they inhabited these treeless plains entirely through choice or, originally, from necessity, as the repeated changes in climate, flora, and aspects of their environment during the different glacial periods must necessarily have been a paramount cause for compulsory migrations or adaptations to new climates and altered life conditions.

TUSKS OF THE AFRICAN ELEPHANT

From the photographs depicting the East African elephant in its free state and among its natural surroundings, some useful points may be gathered with regard to the characteristic poses of the animal and the manner in which it carries the tusks in its various attitudes. A few notes giving the result of close observation may perhaps not be out of place at this juncture.

Pushing through an obstinately resisting tangle of creepers and brushwood, the elephant frequently finds itself compelled to force a passage with the forehead, and is seen with ears pressed close against the withers, the trunk slightly retracted, and somewhat curled inward at the tip. When the elastic vegetation permits, the head is raised, with the curved base of the proboscis, or snout, poised forward; the tusks are then displayed to their greatest advantage, pointing outward in agreement with the poise of the animal's head. Whereas in the resting attitude the head is carried at ease in

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the usual manner with the trunk hanging limp and the tusks pointing downward, in movement the latter are carried in the more elevated position—following the rhythmic sway of the head, as is so well shown in the frontispiece, “Advancing Elephants in the Lorian Swamp.”

The mode of attack on a human intruder has to some extent been described when the gait of the elephant came under discussion in the latter part of the preceding chapter. The African elephant, according to its individual disposition and degree of acquaintance with the nature of its antagonist, begins an attack either with a flourish of the trunk, accompanied by a succession of trumpet-like shrieks, head elevated, trunk aloft, and ears set at full cock; or, on the contrary, in perfect silence with the head partly raised above the normal posture, trunk pendent, tusks pointing forward and ears extended. In both cases, however, the onslaught at close quarters appears to consist of a rush at the standing opponent at a quick amble with a lowering of the head and the tusks levelled at the intruder, conveying at the same time an impression of an eager forward thrusting of the rounded base of the trunk. The ears remain extended, while the trunk is curved inward with the tip poised below the chest, or lowered and the curved muzzle trailing over the ground. The trunk is evidently not carried in the coiled fashion in which the Indian elephant prefers to hold it in similar circumstances. The coiling of the entire trunk has possibly become a more instinctive habit in the latter through guarding this sensitive organ against the rasping effect of the undergrowth in the forest regions of the East.

In most cases the attacking elephant can be turned by a shot in the head or the chest. Whereas the former is fre-

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quently harmless to the animal when the bullet has failed to reach the cavity of the brain, and has lodged itself among the bony air-cells of the skull, the chest-shot will, on the contrary, usually prove fatal within a short space of time, as the missile from a modern high velocity rifle is likely to penetrate to the lungs. There are very few experienced elephant hunters who are confident of dropping their quarry with a frontal shot in the head. The estimation of the exact direction to the animal's brain is no easy matter and requires considerable practice, besides a steady hand. It is futile to try to predict the behaviour of a charging herd of elephants on being fired at; the incidents related and illustrated in Chapters XI and XII represent instances of such experiences, from which I gather that the sudden surprise at the impact of the missile is evidently sufficient to stop an advancing individual for the moment and leave the intruder time for escape. Even in the case of an advancing herd the same chance of escape is offered by reason of the confusion which is likely to happen after the firing.

In the case of a single irritated animal bearing down on its human adversary with an accompaniment of noisy demonstrations, a bullet in the head is usually effective in stopping its impressive trumpeting shrieks, and causes the beast to swerve off and depart. Even when the individual has converted its mode of advance into a rush at the intruder, a shot will more often than not cause it to stop on the instant and remain for a while staggered by the unexpected reception. Unless it is an unusually stubborn creature it is hardly likely to contemplate a further attempt at destroying its opponent.

Unlike the Asiatic species the East African elephant employs its tusks quite freely in its daily life for uprooting

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trees. This they cannot do otherwise than by kneeling on their forelegs, exposing and prying up the roots with their tusks.

It is likely that the disuse of the tusks in the case of the female Indian elephants has gradually produced a diminution in the size of their ivory, finally to such an extent, in the course of centuries, that the rudimentary tusks have almost completely disappeared. Added to this, cases of inter-breeding between domestic individuals and jungle-elephants are not very uncommon and probably assist in producing effects in this direction.

I have never seen tuskless males among East African elephants, and tuskless females appear also extremely scarce. A variety of abnormalities in the shape of the ivory have from time to time been recorded in newspapers dealing with sport and travel. Elephants with one tusk of the pair broken are not uncommon among herds that inhabit bush localities. The fractures can hardly be attributed to combats, as it is unusual to see animals that bear scars of former tusk wounds; elephants are most even-tempered and rarely annoy or threaten one another. More frequently the fracture may have been caused by the use to which the tusks are put in prying up surface roots when they are engaged in felling large acacia trees for the sake of the immature foliage and succulent shoots.

In cleaving a passage through a dense mass of foliage elephants are often observed brushing the pliant branches aside with their levelled tusks. These they also frequently use for gashing the bark of a tree and prying it off in strips to chew, as may often be seen from their "feeding" tracks, which are here and there littered with chewed bark as well as twigs.

The first photograph in Chapter XII shows the typical poise of the head and the way the tusks are carried as the

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animal moves normally through tall grass. The photograph is of further interest as it depicts the living specimen which is now represented in the Natural History Museum by the mounted head, skull, and tusks; the latter, although weighing only a couple of hundred pounds the pair, are both over eight feet in length as measured along their curve, and are symmetrical and shapely, with the clean ivory of a bull in the prime of life.

Although the molars are the teeth that are mechanically and therefore more directly affected by the nature of the food, it appears that changes in the food conditions also have some influence on the quality and hardness of the ivory. The market opinion, for instance, seems to be slightly in favour of East African ivory as compared with tusks from Uganda.

The dentine of which an elephant tusk is composed has a structure which is peculiar to the ivory of these mammals, and by which it is at once recognised. A transverse section of an elephant tusk shows numerous intersecting lines which curve out from the centre to the periphery of the tooth. These lines exhibit a pattern which resembles the engine-turning on the case of a watch and the coarseness of the pattern varies considerably with the localities from which the ivory originates.

Two essential grades of African ivory are recognised, namely the so-called hard ivory from the West Coast and the soft ivory from the East Coast. Whereas the regions that are included in the West Coast are on the whole moist, forest-clad areas, those included in the East Coast are comparatively dry, or arid.

The hard ivory from the western parts of Africa exhibits, as a rule, a dense or close grain, and for this class of ivory

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tusks from the Congo and Gaboon are preferred. The material is especially suitable for high grade statuettes and smooth, delicate carvings. This ivory frequently shows a faint bluish tint in the whiteness of its structure in opposition to the soft and faintly yellowish whiteness of the ivory from the East Coast regions (East Africa, Abyssinia, the Sudan and probably also Rhodesia and Nyassaland). The latter is, on the whole, more open in grain, and is, on account of its elasticity, eminently suited for billiard balls and similar articles. Of this soft ivory, the tusks from Kenya Colony are regarded by many purchasers as supplying the best, and the opinion is held that the equatorial regions supply the most perfect grades of African ivory. Female elephant tusks (cow-ivory) fetch a rather higher price than male tusks (bull-ivory).

According to the experience of an expert Swiss carver whom I consulted on the subject, the hardest grades of West African ivory, although specially suited for delicate work, are liable to show minute, hairlike cracks in course of time.

African tusks are rarely quite symmetrical, and are mostly unevenly worn at the tips. Tusks of young elephants have, in proportion to their length, a much deeper cavity (nerve centre) than those of adult individuals.

The loss in weight through drying, after the tusks are extracted, varies a good deal according to the elephant's age and the size of the tusk. In the case of the smaller tusks, weighing under 40 pounds apiece, the loss may sometimes exceed ten per cent. of the fresh weight.

The exposed surface of the thin "bark" of an elephant tusk shows stains, which differ in specimens from various parts of the African continent. Tusks from eastern Africa, for

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instance, show on the whole a natural straw-colour or a dirty white. In certain regions of central and western Africa the bark varies in hue from a light-brown to a blackish-brown, and exhibits a smoked appearance. It is very probable that this superficial colour of the tusks is due to the frequent contact with the acids of the tree barks and vegetation in the forest localities which the herds inhabit. Such differences in the stain of the tusks can hardly be of sufficient importance to serve as entirely reliable indications of the localities from which the tusks originated.

Adult male individuals in the northern parts of Kenya Colony appear to carry, on the whole, more ivory than the southern specimens. The record weight of a single tusk is noted at 226½ pounds, but at the present day such ponderous specimens, even in the most remote parts of the African continent, would seem to be non-existent; tempting reports of such a trophy may still linger fondly in the minds of keen sportsmen and hunters who are nevertheless only too familiar with the wonderful tales of the bushmen and Wandorobo.

The record length for an African elephant's tusk is cited in Rowland Ward's "Game Records"* as eleven feet five and a half inches, and the tusk in question is one of a pair in an American collection.

Apart from the many freaks and abortions that may frequently be observed, the great diversity noted in the curvature and shape of the African elephant's tusks shows the variations that are constantly occurring in their development. It is not surprising therefore to find considerable changes displayed in the incisors of its extinct ancestors.

* Rowland Ward's "Records of Big Game," 8th Edition, p. 473, 1922.

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The reduction in size of the tusks of the female Indian elephant to their present rudimentary state (frequently they are totally absent) can be partly attributed to the hereditary effects of disuse, added to which the domestication of the species also plays an important part. The ruling chief of one of the Orissa Feudatory States informed me that cases of tame elephants breaking loose and breeding with jungle elephants were not uncommon and had from time to time been brought to his notice.

In the Ceylon elephant the reduction of the incisors has extended even to the males, who carry, on the whole, exceedingly poor tusks. Being an island and consequently allowing of a less scattered distribution within a comparatively small area, the above-mentioned influences tending towards the diminution of the tusks have become more pronounced in Ceylon than on the mainland.

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PART II

PRIMEVAL MAN AND THE PLEISTOCENE ELEPHAS

THE experiences recorded in the foregoing chapters offer material for arriving at some idea of the position of prehistoric man in relation to the imposing mammal world that surrounded him. It is proposed to consider the methods which he may have employed in hunting large animals, such as the Pleistocene antecedents of modern elephants.

For the purposes of this inquiry it is necessary to consider separately, and in turn, the chief human races of ancient Europe, representative of the two abruptly distinct divisions of the Palæolithic age.*

* In Prof. Sollas's interesting "Ancient Hunters" (Macmillan, 1915) we find an excellent summary and description of the various artifacts of the Palæolithic age. The series of culture stages is given in their order as follows (see p. 288, 1915 edition):

UPPERMOST OR FINAL			
PALEOLITHIC: Azilian		LOWER	{ Mousterian (Moustierian) Acheulean Chellean Strepyan
UPPER	{ Magdalenian Solutrian (Solutrean) Aurignacian	PALEOLITHIC	
PALEOLITHIC		LOWERMOST	PALEOLITHIC: Anglian (?)

The earlier archæological division (Lower Palæolithic) falls in the earlier half of the geological period termed Pleistocene: the later division or Upper Palæolithic appears, in Europe, to coincide roughly with the second half of the Pleistocene.

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There does not appear to be material evidence sufficiently reliable to establish beyond dispute the existence of Tertiary man in ancient Europe, but there can be no reason for denying the existence, on the Eurasian, or perhaps the African, continent of precursors of the earliest human race of the Palæolithic age.

Taking into account the severe conditions of life to which such individuals must inevitably have been subjected, and the physical disadvantages that must necessarily have prevailed during such an era, it is doubtful if they ventured to pursue the most formidable mammals of their age. Such an assertion requires nevertheless to be supported with arguments that are perhaps worth a moment's reflection.

Their implements, if they possessed any at all, would of necessity be of cruder workmanship than those that are assigned to the earliest archæological division, and would consist at the most of flints of the Eolithic kind, obviously totally ineffective for the chase of large mammals. It is therefore open to question whether the mere idea of pursuing the greatest mammals of their age could have entered their minds.

Without further reference to a Tertiary type, it is proposed to deal with the huntsman of the succeeding Quaternary period represented by *Homo mousteriensis*, or, briefly, the Mousterian, often spoken of as belonging to the Neanderthal race.

The skeletal remains of this race have been studied by many palæontologists, and the researches of Professor Boule * on the reconstructed remains of the fossil man from La Chapelle-aux-Saints, and other specimens of a more or less

* M. Boule, "Les Hommes Fossiles," 1923, pp. 177-248.

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contemporary era, are ample to illustrate the general characteristics of this early type of human being. The Mousterian is described as much shorter in stature than the modern European, and the males are estimated by Boule to have averaged only 1.55 metres (5 ft. 1 in.) in height, while in the female sex the height does not appear to have exceeded 4 ft. 10 in. Several artistic restorations of this type of Palæolithic Man have been attempted. The following is Boule's * description of the La Chapelle-aux-Saints race:

"A large head placed upon a short and massive trunk; short, thick-set, and very powerful limbs; a peculiar attitude, due to the slightly different curvature of the vertebral column and to the somewhat bent lower limbs."

From this brief account it is evident that the Mousterians, apart from a powerful physique, possessed no advantage over the modern huntsman in regard to speed and agility; in fact, they must have been in certain respects considerably inferior. The relative proportions of their limbs show that they were not well adapted for tree climbing, nor do they appear to have been as active on their legs as modern man.

Although the crude nature of their implements, which remained rudimentary throughout the Lower Palæolithic, indicates a lack of initiative, these primitive folk doubtless knew how to employ their flints to the best advantage. The remains in various caves which were at one time occupied by these primitive people bear witness to the fact that Mousterian man and his immediate predecessors were undoubtedly successful hunters. Not only did they succeed in maintaining their existence in the midst of competing carnivora, but they even reached

* *Ibid.*, p. 228.

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the stage of regarding the large cave bears as their common quarry, and apparently also engaged in the chase the largest mammal of their age.*

The great majority of the mammalian bones found in such caves among the traces of ancient man appear to be those of young animals which were as a matter of course easier prey for the hunters.

Despite the absence of evidence to show that their implements were ever attached to wooden hafts, several of the fashioned flints among the important finds at Taubach † and elsewhere are shaped in such a way that they would easily lend themselves to such modification: they might well have been provided with handles in the shape of a flexible bough, bent double and fastened with strips of tree-bark or some similar tough material. Such an implement would resemble a crude tomahawk, ‡ and, if wielded, or hurled, by a powerful arm,

* In the earliest stages of the Palæolithic some evidence of the chase of *Elephas* is already indicated by the association of crude flint implements with the accumulated remains of *E. trogontherii*, a type of early Pleistocene *Elephas* in Europe, said to represent a transitional form between the "southern elephant" (*E. meridionalis*) and the boreal mammoth (*E. primigenius*). The stone implements found associated with the numerous bones and skull fragments of *E. trogontherii*, at Süssenborn and Mosbach, in Germany, appear to date from a very early epoch of the Lower Palæolithic. They are mostly of such a primitive nature that it is impossible to imagine that they could have been of any use in hunting large animals. They can at the utmost have been used for scraping the meat and disarticulating the joints in the apportioning of the carcase. The animals are more likely to have been secured by means of carefully concealed crevices, for which purpose the locality may at one time have been particularly suitable.

† G. Eichhorn, "Die Paläolitischen Funde von Taubach in den Museen zu Jena und Weimar," Festschrift, 1909 (Tafel XXVII).

‡ Several of the flakes compare favourably with the component part of the stone-axes of certain tribes of Central Australia, which consist of a double-ended dressed flint wedged into the split branch of a tree, and firmly bound by means of thongs of rawhide, gut, horsehair or such-like material. The small double-ended stone-points appear eminently adapted for insertion in the knobbed end of

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would doubtless prove an effective hand weapon against soft-skinned animals, especially in the case of a concerted attack. Mousterian man, judged from skeletal evidence, appears to have possessed physical strength far beyond that of the modern races and inferior only to that of the largest anthropoid ape. Such muscular superiority, coupled with instinct and cunning, and a courage spurred on by dire necessity, may in no small degree have compensated for his deficiencies in other respects. There is little ground for doubting that these ancient hunters ventured to assail even the bison of their day. Evidence from their caves points to the probability that they were often called upon to conduct a concerted attack on the cave bear (*Ursus spelæus*) with a view to obtaining possession of the caves inhabited by the latter. The more usual procedure for such operations would presumably consist in smoking out the tenants from their caverns,* and destroying them by means of boulders dislodged from above the cave mouth. Drop-traps are still commonly employed, even for the destruction of elephants, by certain African tribes, such as, for instance, the Wambute † in the forest regions of Central Africa, but these

some gnarled tree branch. In this way the points, singly, or severally, could be used as hand-weapons in the shape of crude picks, or studded knobkerries.

* The occurrence of charred bone fragments and ashes in association with the most primitive types of flints have established it beyond doubt that fire was among the earliest important discoveries of primeval man. Needless to say, he gained by this means a most potent protective measure against the predacious animals and an incalculable ascendancy over the largest of the herbivorous mammals of his age.

In what accidental manner fire was first discovered remains naturally a matter of conjecture. The earliest human races were probably not sufficiently advanced in intellect to recognise in their flints the means of producing fire, and were compelled to preserve the smouldering remains of trees charred by lightning in the natural course of events.

† For a description see "Among Pigmies and Gorillas," by Prince William of Sweden, 1923, p. 255.

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are of course applied with more penetrative means, aided by the use of poison: the lack of evidence of such effective means dismisses the likelihood of the employment of such advanced methods by the human races of the early Palæolithic age.

The various kinds of Mousterian implements for the chase have been classified by French archæologists as follows: the *pointe*, *pointe double*, *coup de poing*, *pierre de jet*, and the *couteau*. Since wooden hafts are perishable, there can be no trace of evidence of stabbing or thrusting weapons incorporating the flint points; some of the flints are of such a kind that they obviously never possessed handles. The first indication of arrow-points and definite spear-heads appears only at a later stage of culture, during the Upper Palæolithic. Even among the most advanced flints of the latest Mousterian epoch there appears to be no conclusive evidence of their attachment to a haft, and even thus transformed into stabbing or thrusting weapons they could hardly be expected to inflict a mortal wound on the largest pachyderm of their age without the use of a potent poison. Crude stone points are, besides, ill-suited to retain a smear of poison, and the enormous force with which the comparatively blunt instruments would have to be driven, in order to pierce the hide of an elephant, would inevitably arouse the animal either to instant flight or attack, to say nothing of the alarm at once created among a herd. The assault could in no wise be carried out in the unobtrusive manner which the subtler and poisoned penetrating weapons of the Ndorobo hunters and other African tribes of to-day render possible.

The entire absence of remains of even the most primitive containers excludes the possibility of the Mousterians having

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been familiar with the concentration of vegetable poison extracts. The crudeness of their flint points alone would seem to preclude the use of the scarcer poisons extracted from the glands of snakes and venomous lizards and other sources of a similar nature.

The consensus of opinion of palæologists is that Mousterian man's existence* coincided roughly with the final period, in Western Europe, of the "straight-tusked" or "ancient elephant" (*E. antiquus*), a species of fossil elephant contemporary with the "southern elephant" (*E. meridionalis*), and proved to have been persistently associated with the so-called *faune chaude* of the Quaternary period.

NOTES ON *ELEPHAS ANTIQVUS*

According to palæontological data relating to the European elephants, their most flourishing age commenced some time towards the close of the Tertiary period and extended over the Pleistocene, or Quaternary, period. Three prominent species of *Elephas* are known to have occurred in Western Europe, of which two are shown to have been contemporaries of one another, namely, *E. meridionalis*† and *E. antiquus*.

* Profs. A. Penck and E. Brückner, in a great work entitled "Die Alpen im Eiszeitalter," assign the Mousterian age to a period extending from the end of the third glacial epoch over the intermediate genial phase between the third and fourth glaciation periods.

As the result of their investigations they have come to the conclusion that the earth has passed, during the Pleistocene, through four periods of extreme cold which have been termed the *Guenz*, *Mindel*, *Riss* and *Würm* epochs.

† Of *E. meridionalis* abundant skeletal remains have been found, among which the restored skeleton from Durfort, in France, represents probably the finest specimen of its kind, and is exhibited in the Paris Museum of Natural History; it is stated to measure 3.83 metres (12 ft. 9 in.) at the shoulder.

In shape, the tusks in this particular restoration show an outwardly more pronounced lyre-shape outline than those of the modern African elephant, with the tips directed inwards. The tusk-sockets are relatively parallel and do not show

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Their earliest remains have so far been traced to the Upper Pliocene deposits of northern Italy, in the valley of the Arno, where the remains of the two kinds of ancient elephants indicate that they roamed at one time the same region of the great Pliocene forest in southern Europe. The true mammoth, *E. primigenius*, essentially a denizen of the boreal regions, appears to have entered Western Europe at some epoch during Pleistocene times, and continued its existence down to the comparatively recent Neolithic Culture age. Of the three distinct fossil elephants, the mammoth is the most perfectly known, and among its numerous remains some carcasses have been exhumed in the frozen tundras of North Siberia, with their complete dermal clothing of crisp wool, long hair and tail bristles intact. The accumulated skeletal remains of *E. antiquus* in the deposits at Taubach, in the vicinity of Weimar, were found associated with flint implements said to date from the times of the Acheulean and Mousterian culture stages of man. *E. antiquus*, first recognised by Falconer as a distinct species, and the one among the three European fossil elephants most resembling the living African elephant in dental features and in "the mesial expansion of the discs of its worn molars," * is known to have exhibited an extraordinary variability in stature, attributed to a remarkable adaptability to diverse conditions.

the remarkable divergence which is characteristic of *E. antiquus*. A certain difference in this respect is also noticeable between the two existing species, the African and Indian elephants, but less pronounced than in the case of the two extinct kinds. Remains of an early Pleistocene form of *E. meridionalis* occurring among the bone deposits at Süssenborn (Germany) appear to have shown differences in the dental characters of the molars which were regarded by Pohlig as of sufficient importance to raise the specimens to a separate species, *E. trogontherii*.

* H. Falconer, "Pal. Mem.," 1868, Vol. II, p. 284.

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The late Dr. C. W. Andrews of the British Museum informed me that although fragments of skulls and mandibles, besides other skeletal remains of this species, have been discovered in various parts of Europe, he is so far not aware of the existence of a complete cranium of *E. antiquus*. On the other hand there exist adequate remains of its smaller relative *E. melitensis* * and other forms from the different islands in the Mediterranean. During the changes that occurred in the Pliocene and early Pleistocene, portions of the land became restricted habitats of the species and these occurrences may to a certain extent have been responsible for the degraded and dwarfed forms of these islands. At the same time the restriction of their habitats alone cannot have been entirely responsible for the diminutive forms, since these appear to have been immigrants contemporary with *E. antiquus* and moreover show in their dental features a stage of evolution inferior to the latter.

From the indications in such localities as Taubach and other centres of Palæolithic research where the remains of *E. antiquus* have been traced in association with those of a tropical or sub-tropical fauna, it appears to be sufficiently established that it had a strong preference for the warmer zones of ancient Europe and was essentially a forest-dweller, more so perhaps than its contemporary, *E. meridionalis*. Its habitat is said to have extended and receded with the oscillations of the climate during the various epochs of the great Ice Age, when it wandered as far as England after the cold had passed

* H. Falconer, "Pal. Mem.," 1868, Vol. II, pp. 292-308. The development of an overfolded ridge on the frontal part of the skull top is very distinct in these island forms of *E. antiquus*. Although very conspicuous in the cranium, this peculiarity can hardly have been so striking in the plastic form of the living animal's head.

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away, and existed there, for a time at least, along with the boreal mammoth. * There is no evidence of its having adapted itself to severe tundra climate and conditions, and the simple structure of its molars, in comparison with those of the mammoth, suggests alimentary habits similar to those of the modern African elephant, although the flora, topography and climate may have differed materially from those of the latter's habitat. Evidence of a closely allied variety, *E. antiquus recki*, from the Pliocene deposits of Tanganyika Territory, besides the evidence of the small allied forms in the Mediterranean islands, would seem sufficient to indicate the African origin of *E. antiquus*. In structural complexity of the molars † the existing African species is inferior to the extinct *E. antiquus*, and, interposed between the two, the smaller relative of the latter, *E. melitensis*, takes its place. On the supposition that a higher complexity in the dental characters marks a more advanced degree in evolution among the *Elephantidæ*, the simpler teeth of the modern African species would indicate a relatively retarded evolution of its ancestors. The existing African elephant cannot accordingly be regarded as, in the true sense, a descendant of the European *E. antiquus*. It is more likely that the common stock from which have been derived *E. antiquus*

* A. Leith Adams, "British Fossil Elephants," 1877, Part I, p. 68.

† The ridge-formulæ of *E. antiquus* and *E. melitensis* are, according to Falconer ("Pal. Mem.," Vol. II, p. 176 and p. 298), exclusive of talons:

E. antiquus (true molars).

$$10+12+16$$

$$\overline{10+12+16}$$

E. melitensis (true molars).

$$8+10+12$$

$$\overline{8+10+12}$$

Ridge-formula of *E. africanus* (K. A. v. Zittel, "Grundzüge d. Pal.," 1923, Vol. II, p. 632):

$$\begin{array}{r} 7+8+10 \\ \hline 7+(8-9)+11 \\ 272 \end{array}$$

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and the dwarf forms of the Mediterranean on the one side, and the modern *E. africanus* on the other, may in the future be traced on the African continent and recognised in a form possessing dental features inferior to the former, and equal to or possibly even less complex than that of the modern species.

The wide migrations of *E. antiquus* * from ancient Africa may have been largely due to the volcanic unrest and upheavals, the consequent devastations and secular aridity in localities inhabited by the original emigrants of the species during the time of the formation of the great Rift Valley. From the fossil flora,† found in association with its remains, it may be inferred that the climate of its original habitat was either tropical or sub-tropical, and thus it is probable that it possessed similar dermal characters to the modern African species and was probably equally hairless. Whereas the composition and texture of the integument of the mammoth (*E. primigenius*) are well known from its preserved remains in the frozen tundras of Siberia, in the case of *E. antiquus* they are still a matter for speculation and conjecture; since apparently neither fossilised portions of its skin nor the impressions of its integument on rock have been discovered up to the present. Unlike that of the mammoth the hide of *E. antiquus* may, for the reasons

* In India *E. antiquus* is represented by an allied form, *E. namadicus*. Since the most ancient types of the *Proboscidea* have been traced by Dr. C. W. Andrews to the African continent (the Fayûm in Egypt), a hypothesis is acceptable for the present that the Asiatic group of Proboscideans represents a parallel evolution from the earliest emigrants from Africa at an age when land connections existed in the southern regions of what is now the Red Sea.

† In regard to the flora associated with the remains of *E. antiquus* see Heer's "Die Urwelt der Schweiz." Zürich, 1865, p. 507. The Pliocene forests of southern France contained, according to de Saporta ("Recherches sur les végétaux fossiles de Meximieux," 1875), bamboos among the vegetation of a mild climate.

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suggested on page 229, have presented a shagreenous appearance similar to that of the modern elephants.

The smaller ears of two species that are apparently both derived from the eastern series of *Elephas*, namely, the extinct boreal mammoth (*E. primigenius*),* and the living Asiatic elephant, both exhibiting the highest complexities in dental development, seem to suggest that this characteristic is either associated with a higher degree of evolution, or may already have been a distinctive feature among the earliest contemporary elephants of the Pliocene.† Their differentiations in this direction, as also in the varying number of their toes, may possibly date as far back as their earlier ancestral forms of the Tertiary: this surmise would find a support on the basis of a parallel between ontogeny and phylogeny.‡

Remains of *E. antiquus* have not only shown its wide distribution in Western Europe at a certain epoch during the Pleistocene but also demonstrate the extraordinary variability

*The close resemblance in structural complexity of the molars of the mammoth to those of the modern Indian elephant and also the resemblance in a certain character of the cranium, according to Cuvier (see Leith Adams, "British Fossil Elephants," 1879, Part II, p. 128), indicate its probable evolution from the eastern series (Siwalik series). The peculiarly peaked cranium of the boreal mammoth, apparently more pronounced in the male than in the female, might well have been the outcome of cranial developments in response to the growth of the enormous tusks and conducive to a considerable change in the balance of the head relative to the body of the individual. Although widely scattered in Europe and even in Italy, absence so far of its remains in the Mediterranean islands and Africa supports the belief of its origin from the eastern series.

†It is interesting to note that several of the large animal forms of the Pliocene and Pleistocene of Europe are still represented, on the African continent, by closely resembling modern types. Among such mammals can, for instance, be cited the various extinct species of rhinoceros and the hippopotamus. The modern representatives give evidence of a comparatively arrested evolution, for which apparently no definite reason has been assigned.

‡The wide differentiations between the Indian and African species are shown in their respective early foetal stages.

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in size. Skeletal remains discovered at Upnor, near Rochester, give evidence of the enormous proportions which individuals of this fossil elephant attained. The late Dr. Andrews, who was engaged in the restoration of these particular remains, estimates the height to be in the neighbourhood of fifteen feet. The humerus is 4 ft. 4 in. (1.32 metres), and a foot longer than that of an African elephant stated to have stood 11 ft. 4 in. The skull is unfortunately wanting, but a tusk was recovered and presents, as is characteristic of the normal tusks of this species, the comparatively weak curvature reminiscent of the slightly curved tusks from Central Africa. It appears devoid of the lateral bulging, or so-called lyre-shaped outline, frequently observed in large African tusks.

There is, perhaps, sufficient evidence to justify the supposition that in general appearance *E. antiquus* resembled the modern African species, and an idea of the frontal aspect of this gigantic mammal can well be gathered from photographs of its modern successors.

In disposition and habits it differed probably very little from the present *E. africanus*, and from our knowledge of the latter we are in a favourable position to gain an insight into the relation in which primeval man stood to his contemporary *Elephas*. Considering the normally mild disposition of the African elephant, notwithstanding the relentless persecution it has undergone for many generations, we may conclude that *E. antiquus* was probably a most inoffensive creature. And since it must have been less wary in its behaviour towards mankind it was doubtless far easier for the ancient hunters to approach their quarry: its colossal size would render the chances of a close approach and escape more favourable, even per-

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mitting the huntsman to steal up to within striking distance of a drowsy individual, deliver his blow and creep out of the way. But, on the other hand, what means had the men for venturing to attack the great creature with any hope of success? On examining the general position of the Mousterian and his predecessors in relation to their contemporary mammalian world, one is forced to conclude that they were not in a position to conquer adult *Elephas* by a direct assault. It is therefore not unlikely that to the most ancient hunters of this period may be ascribed the origin of the rudimentary devices for entrapping game by means of the most primitive pitfalls, such as disguising crevices or covering holes in suitable forest localities.

The accumulated remains of *E. antiquus* at Taubach, in Germany, associated with implements dating from Mid-Pleistocene, appear to suggest that here was a locality especially suited for ambushing and entrapping these elephants.

An extensive game drive, with the assistance of bush fires, appears an unlikely procedure considering the scantiness of the population in those ages, scattered over an enormous area of Europe, where Mousterian man, judging from the evidence of his isolated remains, seems to have lived in very small communities, in much the same way as we still find among native bush races in the primeval forest regions of India and Central Africa. Young elephant calves, and adults among the diminutive forms, may on occasions have been the victims of a concerted assault by a body of hunters, but on the whole it can be regarded as established that the great pachyderms were trapped in "natural pitfalls," such as concealed fissures or cavities, since it is doubtful whether man of the Lower Palæolithic culture age possessed even the means for the excavation

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of artificial burrows.* Where the natural features of the ground promised success to the "trappers," a small body of these hunters in ambush, provided with brands and torches, would be sufficient to create such a panic among a herd of elephants as to scatter the members with increased chances of their capture in the pitfalls. In such cases the younger animals would be most likely to become victims.

It now remains to be seen whether the hunters of the more advanced division of the Palæolithic age and the more intimate contemporaries of the boreal elephants were possessed of resource and equipment sufficiently effective to place them in a position to engage in a direct attack on the mammoth—in size the most formidable mammal of that period.

THE HUNTING OF THE MAMMOTH

The wide range of distribution of the boreal or hairy mammoth (*E. primigenius*) during its most flourishing period of existence is doubtless one of the main reasons for the diversities in the appearance and height of these extinct mammals. Restored skeletons of this animal can be seen in different museums in Europe and America, and among these the mounted specimen in the Petrograd Museum † represents an individual of uncommonly fine stature: the average height of the mammoth was probably somewhere between that of the

* Other means of capture, such as those practised by certain aborigines of Africa, need hardly come into consideration: from the primitive nature of his artifacts, these seem too far advanced for a belief that Mousterian man had resorted to such-like methods. These consist, for example, in the setting of a running noose over a covered pit-hole, and the destruction of elephants by means of a weighty drop-spear released by skilful rope devices.

† The height of the shoulders of the restored skeleton of this specimen, from Beresowka (N. E. Siberia), is stated to be 3.25 metres. See M. Boule, "Les Hommes Fossiles," 1923, p. 52.

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two modern species of elephant, the African and the Indian. Towards the end of the mammoth's period of existence in Europe it appears to have degenerated in size, in some cases to such a degree even that some have been led to a belief in the existence of dwarf races.

According to Penck and Brückner, the final stage of the mammoth's existence corresponds with the termination of the last glacial epoch or with the most recent glacial retreat. Its life zone in Western Europe comprises the Magdalenian culture stage of the Upper Palæolithic.*

Various pictorial reconstructions have been made on the evidence of incised drawings found in caverns and rock-shelters at one time occupied by Magdalenian man, but we can form no better idea of the living creature than from the mounted dermal remains of the specimen in Petrograd, the carcase of which was found in a wonderfully well-preserved condition in the frozen tundras of Siberia.†

The following is Salensky's ‡ description of the Petrograd

* According to these authorities (A. Penck and E. Brückner, "Die Alpen im Eiszeitalter") the Magdalenian stations were situated in the proximity of the glaciers of the last, or *Würm* glaciation period.

† In regard to the preservation of such mammoth remains, Prof. W. Boyd Dawkins, in his "Early Man in Britain" (Macmillan, 1880), mentions a curious incident, and says, on p. 106:

"The admirable preservation of some of the carcases is undoubtedly due to their having been entombed directly after death and then quickly frozen up, a process which need not necessarily imply climatal conditions unlike those of the present time in Siberia. In unusually hot spring times the warm waters borne down by the great rivers from their southern feeders thaw the frozen morasses with incredible rapidity, so that the hard ice-bound 'tundra' becomes quickly converted into a treacherous bog. In the exceptionally warm season of 1846, the mammoth discovered by Lieut. Benkendorf on the banks of the Indigirka was thawed out of the tundra until it was revealed to the astonished eyes of the beholder, standing on its feet in the position in which it had been bogged."

‡ W. Salensky, "Über die Hauptresultate der Erforschung des im Jahre 1901 am Ufer des Beresowka entdeckten Mammutcadavers." G. R. Sea. Six. Congr. Internat. Zool. Berne, 1904, pp. 67-86.

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mammoth, taken from Osborn's "Age of Mammals" (1921, p. 420) :-

"The head was larger as compared with the length of the body than in recent elephants, a character which stands in close connection with the enormous development of the tusks: these were distinguished by their spiral form, the points directed inward. The ears were very small and covered with hair at the end. The colour of the hair is a yellowish brown, varying from light brown, and a coat of woolly hair, 2 to 2½ cm. in length, covered the whole body.

"Interspersed with these were a large number of longer and thicker hairs, which formed mane-like patches on the cheeks, on the chin, on the shoulders, flanks, abdomen, etc. A broad fringe of this long hair extended along the sides of the body as depicted in the Palæolithic sketches from the Comberelles Cave discovered by Captain and Breuil in 1901. Especially interesting is the food in the stomach and mouth, which consists of a meadow flora such as characterises this region of Siberia at the present day, thus appearing to disprove the theory that the climate was milder than that now prevailing. Nor does it appear that it was more frigid, because there are few representatives of tundra vegetation."

The Petrograd specimen does not show a conspicuous length of hair, and it is possible that the condition of the coat varied considerably according to the severity and the changes of the climate known to have occurred during the different glacial epochs, and also with the seasons of the year, as in the case of many of our modern animals.

The Magdalenians were possessed of great artistic talents,

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especially noteworthy when we consider how remote was their epoch in the world's history. Their drawings of contemporary mammals give in some cases remarkable details: we have, for instance, a figure of a "charging mammoth" * engraved in profile upon a piece of tusk, which conveys an excellent impression of the appearance of this extinct elephant. The most realistic feature of this sketch is not only the attitude of the head and the general position, but also the comical poise of the tail. The distinctive and peculiar peaked summit of the head is clearly shown. The sharp indentation at the nape may, on the other hand, have been somewhat exaggerated, as may be often observed in outline drawings of children; but, as the drawings of mammoths of this age invariably display this same peculiarity in a greater or lesser degree, it is evident that the animals must have possessed a very marked depression at the nape, much more accentuated than that seen in the modern Asiatic elephant. The great rise in the vertex of the mammoth's cranium also supports this view. The concavity of the forehead of the mammoth is apparently not quite as pronounced as in some of the Indian elephants. The large hump and the great convexity of the back shown in the Magdalenian engravings cannot be entirely accounted for from its skeletal remains, and may therefore be regarded as in the nature of a fat-hump, serving, with other fatty accumulations, as a provision against the vicissitudes and hardships of the boreal conditions of life. The posterior part of the mammoth's back sloped towards the very low hind-quarters considerably more

* This famous piece of ivory, discovered by Lartet among abundant traces of Palæolithic industry in the Early Magdalenian layer of La Madeleine in the Dordogne, will be found reproduced in most important works on the arts and industries of ancient man of the Stone Age.

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than is seen in the so-called *Koomeriah* * specimens among the fine elephants from Nepal, which to some extent show a similar falling away from the back towards the rump; such specimens are regarded in India as less fast in their pace through more imposing in appearance and majestic in gait than the average Asiatic elephant.

The crisp woolly hair of the Siberian mammoth carcasses exhibits a yellow-brown colour which may possibly be the result of a bleaching process due to long contact with the soil. It is not improbable that the pigmentation in the living animal was much darker, tending perhaps even to a blackish hue.† The peak of the head and the great hump appear from the Magdalenian drawings to have been covered with a profusion of long hair or bristles.

From the experiences recorded in the foregoing chapters it is evident that, if proper care be taken there is little difficulty in approaching the African elephant in its native wilds.

* The natives of India class the Asiatic elephant into three distinct natural breeds, or types, according to the physical perfection of the animals. The types are commonly known as *Koomeriah*, *Dwasala*, and *Meerga*. Animals belonging to the first type are regarded as the most perfect in points, and consist invariably of specimens of massive proportions. The main characteristics are briefly the following: a wide, straight back, sloping from the withers to the tail; the animal stands high on its fore-quarters, with comparatively short hind legs and plump hind-quarters; the large and shapely head has a pronounced swelling between the eyes, and the depression in the forehead, just above this prominence, is also very distinct; the summit of the head appears higher than the average with the dome of the cranium uncommonly massive; the neck is short and thick-set, the chest massive, and the body of great depth and girth. The *Koomeriah* is as a rule a very good-natured animal and most even-tempered, reliable and staunch. The type is much sought after for its majestic appearance, and large sums are paid for it by wealthy natives of India.

The *Meerga* is much lighter in build and possesses, among many disadvantages and unfavourable points in disposition, a pronounced arched back. Individuals of a type intermediate between the two are the most common and classed as *Dwasala*. Specimens in the zoölogical gardens belong to one or other of the last two types.

† Capt. J. G. Dollman, Assistant-Keeper of Zoölogy (Brit. Mus.), informs me of instances where black-coated skins have faded to a red-brown colour through long storage.

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The Indian elephant is on the whole somewhat easier to approach than its African congener, and some of the primitive jungle folk of Central India are able to sneak up to within arm's length of the animals: on one occasion I satisfied my curiosity by creeping stealthily up to an elephant and thrusting a bamboo lath at the animal, and found that the placidly feeding creature was startled to such an extent that it moved, without turning, hurriedly in the direction it was facing at the moment. It seems reasonable to suppose that the mammoths, and particularly the heavier individuals, were at least as easy to approach as the modern elephants. In fact, a certain wariness in the latter must certainly have developed in the course of the many centuries of intensive persecution such as could by no means have occurred during the life period of the mammoths.

The superior stage of industry of Upper Palæolithic man throws a somewhat different light on his hunting methods. In the early Magdalenian culture epoch we note the important invention of the harpoon, the crudest form of which appears to have been a short, straight point of bone, deeply grooved on one face, while the notches along one edge foreshadow the later development into the barbed points of the middle and late Magdalenian periods. Some of the points are scored with a deep longitudinal groove which may possibly have been intended to hold a smear of poison.

We here find evidence not only of a more refined and delicate class of work in the dressing of the various stone implements, calculated to increase their penetrative effect, but also signs of decorative skill. If it were possible to ascertain beyond a doubt that these hunters of the Upper Palæolithic

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were familiar with the production of potent vegetable poisons, this would materially strengthen the surmise that such weapons, rendered more effective with poison, were employed in the chase of the mammoth, in a fashion identical with the method in vogue among the East African Wandorobo, which has been described by Neumann in a passage quoted in Chapter V *supra*.

Notwithstanding that there is so far no evidence to show that the Magdalenians applied poison to their spear and harpoon points, there can be no reason to deny that these more efficacious weapons of the chase may have originated with the men of the advanced Palæolithic age.

The discovery by Breuil and Obermaier in the Magdalenian layer of deposits at Placard, in the Charente, of human skull-tops, cut and fashioned into ceremonial drinking-bowls,* is distinctly a matter of interest as showing that, in the absence of pottery (the beginnings of which have so far only been traced to the earliest Neolithic culture), † these primitive types might have possessed larger containers for the concentration and boiling of liquids.

The occurrence among their implements of the spatula is also of some interest, for these two household implements bear evidence that the Magdalenians were at least in possession of the essential means for the concentration of extracts. The fact that since time immemorial even the most primitive among

* See H. F. Osborn, "Men of the Old Stone Age" (Bell, 1921), p. 379.

† It is yet an open question whether the Magdalenians were or were not acquainted with the art of producing pottery by baking clay. That they had at least discovered the plasticity of clay is evident from the discovery by Comte Bégouen of a pair of ancient bison statuettes (each about two feet in length) in the Tuc d'Audoubert Cavern (Ariège). The statuettes are artistically modelled, and date, according to archaeologists, from the Magdalenian culture period.

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the bush races of Africa have used deadly poison (extracted from herbs and the wood of certain trees), and in early history the Scythians (an ancient nomadic race in northern Asia), supports to some extent the suggestion that the hunters of the advanced Palæolithic may have been familiar with their use.

The difference in the penetrative power of the well-shaped bone and ivory points of the Magdalenian and that of the iron blades of the modern Ndorobo hunter may have been adequately balanced by the difference in strength, energy and skill of the two types of huntsman. The dermis of the mammoth's integument appears, from the specimens of its frozen remains in Siberia, to have been no thicker than that of the modern elephants, and varies roughly from three-quarters of an inch to one inch in thickness. In fact, it would seem that the skin of the mammoth would be somewhat less difficult to penetrate than that of the modern elephant, since the epidermis of the former is very thin and devoid of the peculiar formation of the corneous layer observed in adult modern elephants, where the corneous layer, in certain regions of the body, may exceed a quarter of an inch in thickness. On the other hand the mammoth possessed a covering of underfur and bristles, which however appear not to have been so close-set as to form a serious impediment to the penetrating powers of thrusting weapons. Taking into account the rigours of a cold climate and the much more severe conditions of existence, it is likely that ancient man in Western Europe was capable of performing feats of endurance and agility at least equal to, if not considerably surpassing, those performed by the modern native huntsman.*

* That the hunters of this age could wield their stone weapons with remarkable skill and strength is demonstrated by the effect on the smaller quarry of the period. Prof. A. de Quatrefages, in his "*Hommes Fossiles et Hommes Sauvages*,"

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We are enabled to form a just idea of the type of huntsman who existed during the time of the mammoth. This race of man is perhaps best represented by the Crô-Magnon type of individual, whose skeletal remains have been the subject of careful and exhaustive researches. The men of this type were, apparently, not only tall, ranging from 5 ft. 10 in. to a little over 6 ft. in height, but were of athletic build, and the proportions of the lower limbs indicate a capacity for rapid movement. According to de Quatrefages* the skull of the human contemporary of the mammoth in Europe presents in a high degree the characters which are regarded as indications of an intellectual development of a most advanced kind.

For a race largely dependent on the chase these men could hardly have been endowed with more favourable physical gifts, and their implements, even those of the Solutrean culture stage, show a variety of stone weapons manufactured with a comparatively high degree of skill. Besides these there is evidence of a fair assortment of bone implements which appear to have been perfected in the later, Magdalenian, epoch. Of the latter the following are of especial interest from the point of view of the chase, viz.: the harpoon, the javelin-point, the spear-point, and the spear or dart-thrower (*propulseur*).

It is evident from the numerous drawings and rock-en-

1884, gives on page 45 an illustration of a lumbar vertebra of a young reindeer, in which was found embedded a flint spear—or javelin point.

It is interesting to note that even in the more advanced Neolithic age and in modern times, as in the case of the bushmen of South Africa, stone points have never been entirely abandoned or replaced by bone weapons.

Although it would be difficult to imagine how such weapons could have been employed with any success on the mammoth without the use of poison, they appear to have been efficient enough for the hunters' concerted attacks on the large carnivora, and even the bison of their age.

* A. de Quatrefages. "Hommes Fossiles et Hommes Sauvages," 1884, p. 65.

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gravings dating from Magdalenian times of the mammoth, woolly rhinoceros, the bison, etc., and especially those depicting actual stalking scenes and the assault on the great mammals, that men of the Upper Palæolithic age were in the habit of attacking their quarry at close quarters * apart from employing other and less direct means.

It is reasonable to suppose that such a mode of hunting could not have been effective in the case of the mammoth without poison on the weapons. Even so, this mode of pursuit could make no appreciable difference in the numerical strength of the numerous and vast mammoth herds. It can, for instance, in no wise explain the occurrence of accumulations of mammoth remains such as those at Prêdmot, in Moravia, which at the time of their discovery aroused the keenest interest among scientists.

In this particular locality bones and skull fragments have been found pertaining to several hundred mammoths, together with numerous implements of the Solutrean culture stage, an epoch immediately preceding the Magdalenian period. The mere association of these artifacts with the skele-

* In a cave in the Mirzapur District in India numerous paintings have been discovered among which a hunting scene is of particular interest. The scene represents six men attacking a rhinoceros and armed with harpoons possessing primitive shaft-heads similar to those that are found in Europe belonging to the end of the Palæolithic age.

In the case of the mammoth apparently no pictorial evidence of such nature has yet come to light. On the other hand, the outline drawing of an elephant from the cave at Pindal (Asturias) dating, according to Breuil, from the Aurignacian epoch, shows clearly the position of the heart by the recognised symbol. These ancient hunters were evidently well acquainted with the vital parts of their quarry.

The recent discoveries by M. Norbert Casteret in the cavern at Montespan, Haute Garonne, have disclosed some very interesting facts in regard to the rites of the ancient hunters. Here, a number of rough clay models of bear and other quarry of the Magdalenian age show evidence of holes and gashes from stabbing weapons, and appear to have served as effigies in the performance of their hunting rites.

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tal remains, of course, does not imply that they were the actual means employed for secured the booty. This remarkable accumulation may represent either the remains of herds that have become victims of an organised drive into a bog or over a once existing escarpment or else of animals that were trapped singly over an extended period, in improved fissures or properly excavated "game-pits." * Secular changes, culminating in a severe drought, can sometimes lead to the destruction of whole herds of animals. This possibility, in this particular locality, seems excluded, since an abundance of bone implements, among them an ivory carving of a mammoth (the well-known mammoth statuette from Prêdmost), were found in association with this ancient fauna. The facts seem rather to point out to the existence, at one time, of a regular encampment of ancient hunters in the vicinity.

While the Mousterians appear to have been at some period of their existence also contemporaries of the boreal mammoth (*E. primigenius*), it would seem from the traces of this race,

* It is interesting to note that certain native tribes, to give an instance, the Wandorobo of East Africa, still look upon the "game-pit" as the most successful means of securing their large quarry. During my travels through the Masai country I once stumbled upon an elaborate system of freshly-dug "game-pits" which the Wandorobo had intended for the capture of buffalo and rhinoceros. The excavations had doubtless taken the hunters some time to complete; the holes had apparently been dug with an ordinary *sime* (Masai sword) blade. The openings were rectangular in shape 8 to 9 ft. long, about 3 ft. in width, and at the most 5 ft. deep; the longitudinal walls tapered down to a width of roughly 18 in. at the bottom of the pits. The cavities were spanned with boughs, covered with a thin layer of earth, grass and foliage. The pits and the mounds of excavated earth were suitably arranged among the brushwood, at places where it was intersected with game paths. Once the quarry becomes wedged between the tapering walls it is impossible for the animal to extricate itself. As this is strictly forbidden by the game laws, the offenders decamp from the locality the moment they suspect their handiwork is discovered, and are rarely caught. Effective as these "game-pits" are, this mode of capturing the wary animals is largely a matter of chance, and the younger animals are the most likely victims.

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as a whole, that they were in a sense not entirely emancipated from a purely forest life. The fauna in certain areas of Western Europe may very well have varied with the advance and retreat of the glaciers during the great Ice Age, thus causing at certain periods an intermixture of the fauna indicative of a genial climate (fauna associated with *E. antiquus*) and those peculiar to the arctic regions (fauna associated with the boreal mammoth).

In France, Mousterian remains have in places been discovered in open regions. In Germany, representatives of the same race, often spoken of as the Neanderthal race, seem on the whole to have been more intimately associated with forest regions.*

With the advent of the Upper Palæolithic races in Western Europe, mankind became more definitely associated with the open regions, and wandered in large communities, leading a nomadic tundra or meadow life amid vast herds of mammoth, to which many of their drawings and rock-engravings appear to allude.†

The increase in the population of Western Europe in the later epochs of the Palæolithic age would render quite feasible the more effective organised methods of the chase. These consist of the modes of "wholesale" pursuit of game that are still in vogue at the present day among certain African tribes, as, for instance, the encircling of elephants, by means of grass

* The traces of the flora, such as leaf impressions on rock, as in the case of Taubach, point, according to Pohlig ("Wie Welten und Menschheit entstanden," 1923, p. 147), to a flora resembling the Mid-European forest flora of the present day.

† Of these may, for instance, be cited the drawing of a mammoth herd among the decorations of the Galerie des Fresques at Font-de-Gaume and similar drawings in other centres of Palæolithic art.

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or bush fires, in such a manner as to drive the animals into a system of trenches or bogs, or scare them into a precipitous ravine. Extensive hunting operations of this kind require, however, a large number of hands besides suitable localities for the purpose. For these reasons they can hardly be regarded as of sufficient importance to lead to the complete extinction of the vast mammoth herds ranging over an enormous area of Europe. On the other hand, such organised modes of the chase may well have brought about serious depletion in localities specially suited for such operation, and caused the molested herds to migrate.

In modern times we see that even though the aborigines of Africa possess weapons that are far more effective than those of ancient man, their pursuit of the larger game animals, especially in forest regions, appears to be of little consequence: destruction by mankind alone can therefore not be regarded as the dominant factor in the extermination of the large Pleistocene mammals. It is only since the introduction of vastly improved firearms, combined with the extension of rail traffic, that one notices the rapid diminution of the game in all parts of the world. As an instance can be cited that before the coming of the railways vast herds of bison, each numbering many hundreds, ranged over the open grassy plains of North America. Only a few now survive in strictly preserved reservations.

The extraordinarily rapid disappearance of the game in South Africa since the opening of the first railways presents a similar story.

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AFTER discussing, in the foregoing pages, a few of the more prominent differences between the African elephant and its Asiatic congener, it may, perhaps, not be inappropriate to describe a little experience with the latter, which will convey to the reader some idea of the conditions which the photographer of wild life has to contend with in tropical jungles in India.

Much has been written on the nature of sport with the Indian elephant, and of the numerous books that deal with the shooting of large game in the tropical forest of our Eastern colonies those describing the chase of the Asiatic elephant, from the pen of Sir Samuel Baker, take precedence amongst the annals of hunting the great quarry. Elephant shooting is usually described with emphasis on the venturesome aspects of the chase, which cannot find its equal. This, no doubt, is the case when the game is fairly met, but the introduction of powerful modern, high velocity rifles has placed in the hands of the huntsman a weapon of destruction so potent that the quarry is mostly deprived of anything like a sporting chance. But keen sportsmen are offered perhaps an even more exhilar-



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ating pastime than the elephant hunting of the old style by the exchange of the rifle for the camera.

The pursuit with the camera of these magnificent denizens of tropical jungles into their secluded haunts is perchance, to many, a more exciting diversion, by which not only is enjoyable sport obtained, but, also, opportunities are offered to the interested observer to gain a more thorough insight into the habits and disposition of his quarry. From the photographs of the African elephant that appear in the foregoing chapters it will be seen that the stalking of these giant mammals, with camera in hand, may be carried out with ample success to repay one's efforts, and the nature of the sport offers all kinds of opportunities for exciting experiences. In the Indian jungles, this is particularly the case in localities where solitary tuskers are to be encountered.

On receiving a kind invitation from one of the ruling chiefs of the Feudatory States of Orissa, the Maharajah of Mayurbhanj, a very keen *shikar*, I was delighted to avail myself of the opportunity, and spent some weeks in the forest-clad hill tracts of this splendid State, in parts of which elephants are fairly numerous. For the better comprehension of the incidents about to be narrated, it will perhaps not be out of place to preface them with a brief and general description of the physical aspects of the locality as otherwise some of my readers might be apt to consider the country as a mere out-of-the-way spot on the globe. In this respect, I can do no better justice to the beauty and magnificence of the wild scenery of the hill tracts of Orissa than to draw upon the records contained in the "Bengal Gazetteers," Vol. XXI, entitled, "Feudatory States of Orissa," where the description of the general

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aspects of this particular locality may serve as a preliminary introduction to the nature of the country in which these incidents took place:—

“The Mayurbhanj State is the most northerly and the largest of the Feudatory States of Orissa. It lies between $22^{\circ} 34'$ and $21^{\circ} 17' N.$, and between $85^{\circ} 40'$ and $87^{\circ} 10' E.$, and is bounded on the north by the British districts of Midnapore and Singhbhum, on the east by the Midnapore and Balasore districts, on the south by the district of Balasore and the States of Nilgiri and Keonjhar, and on the west by the State of Keonjhar and the district of Singhbhum. Mayurbhanj State extends over an area of 4,243 square miles and presents every variety of soil and scenery. It abounds in rich valleys, but a vast extent still remains under primeval jungle. The central portion of the State is occupied by a group of hills, about 600 square miles in area, known as the Simlapal Hills. The Meghasani Hill, literally the ‘Seat of Clouds,’ which rises to a height of 3,824 feet, is situated in the southern extremity of this group. Sir William Hunter, in his ‘Statistical Account of the Orissa Tributary States,’ speaks of this group as ‘the hitherto almost unexplored mountains of Mayurbhanj, heaped upon each other in noble masses of rock from 3,000 to 4,000 feet high, sending countless tributaries to the Baitarani on the south and pouring down the Burabalang with the feeders of the Subarnarakha on the north. The peaks are densely wooded to the summit, and, except at the regular passes, are inaccessible to beasts of burden. The intermediate valleys yield rich crops in return for negligent cultivation.’ The description given above in the year 1877 remains true to this day. The ravages of wild beasts and its malarial climate have checked the growth

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of the population in this tract and, except for a few Kharia and Kol hamlets, it remains practically uninhabited.

“The natural beauties of the country are exceedingly fine: vast ranges of forest, and tree-clad hills and mountain ranges alternate with well-watered valleys gleaming bright in the sun.

“In the wild tracts of Mayurbhanj, the soft beauty of the hill-clad ranges is relieved by wild precipitous bluffs, scored and seamed by the storms of ages; in the rains, raging torrents, flashing for miles in the sunlight, hurl themselves in fine water-falls to the slopes below.

“The surface of the plateau land between the valleys, where level, is usually clothed with a dense scrub jungle in which *Dendrocalanus strictus* is prominent. The steep slopes of the hills are covered with a dense forest mixed with many climbers. *Sal* (*Shorea-robusta*) is gregarious and among the numerous varieties of trees are found also those occurring in the lower Himalayan slopes. Mixed with these, however, are a number of trees and shrubs characteristic of central India.”

* * * * *

The extensive and very thinly populated tracts of the Simlapal, in the State of Mayurbhanj, are the natural haunts of elephants, and probably most of the elephants in Orissa frequent this magnificent elephant-forest at some time or other in the course of their existence. The fauna shows a great diversity, and amongst the larger game animals are found two representatives of the bovine species, namely, the lordly *gaur*, locally called the “gayal,” and the Indian buffalo. The latter is now rare in the State of Mayurbhanj.

The *gayal*, or bison, is a timid creature, and occurs mostly

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in the denser and remoter forests of the State. This animal is usually found in the same localities that serve as favourite haunts and feeding grounds of the elephant; in fact, the *gayal* frequently grazes in close proximity to a herd of elephants. The principal carnivora are the tiger, leopard, hyæna, wild dog, jackal and fox. Tigers are found everywhere, and are occasionally destructive to human life. Some of them have taken to killing cattle and a few are man-eaters: the majority are, however, game-killers and do not shrink from trying their skill on elephant calves, in spite of the close guard which the watchful cow-elephant keeps over her young. The elephants of the Indian forests and hill tracts are, on the whole, timid creatures, and herds in particular, on hearing the discordant cries of human beings, will usually shun the locality and move away in unobtrusive manner, when it is interesting to watch the rapid and orderly way in which the scattered members of a feeding herd brush forth from among the concealing vegetation and silently fall into a travelling column. The sight of such a stately procession marching past among appropriate surroundings can hardly fail to make an impression upon the observer.

The procession is usually headed by a female and a miscellany of lesser members of varying age and stature follow in the wake of their experienced leader. They move in single file, except for the young ones and babies, which keep crowding round the sides of their respective parents, or amble in their droll and eager fashion partly below the bulky flanks of their mothers. A few elderly herd-bulls, with an occasional patriarch, close up the rear.

Cautious stalking and an occasional element of dash are



INDIAN JUNGLE ELEPHANTS RESEMBLING A TROOP OF SCURRYING RATS



A TRUCULENT INDIAN JUNGLE ELEPHANT FACING THE CAMERA

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required to make the most of camera work with large game. The element of surprise in the critical moment is often resorted to with success and, rarely, with danger. The sportsman's acquaintance with the habits and disposition of his quarry, coupled with a certain amount of knowledge of woodcraft, are useful assets, and these are occasionally put to the test. He may be called upon to show initiative and resource to avoid an unpleasant situation in a sudden face-to-face meeting with an ill-tempered, solitary bull, or so-called "rogue." There is a great individuality in the temperament of these solitary customers. Some are decidedly savage and truculent, but the term is more often misapplied; for many an animal referred to as a rogue gains this title not so much because of its aggressive nature, but more on account of its sagacity in scaring wayfarers in order to help itself to the contents of their loads.

A brief account, relating to an experience with a genuine rogue, may, perhaps, be of interest to the reader, while at the same time it brings back to the writer a recollection of one of several lively incidents, forming part and parcel of the sport of animal photography. This particular incident has, moreover, taught me to abstain from taking liberties in the future with these solitary and ill-tempered customers.

On the 26th of January, 1922, I happened to be camped at the foot of the Simlapal Range, in a locality of the Mayurbhanj State known as Pithabata, having received information from one of the forest rangers of the presence of a destructive rogue elephant which at times made the approach to this hamlet unsafe for the traveller. I was, moreover, to have plenty of work for my camera, as the surrounding hill tracts were said to be among the most favoured haunts of these lordly

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masters of the forest. The forest officer of the State had very kindly placed at my disposal a few excellent trackers of an aboriginal stock, known under the name of Khariah, said to be descendants of the primitive inhabitants of India and of Dravidian stock. Their means of subsistence may briefly be likened to that of the Wandorobo of our East African possessions, as they live almost entirely on natural resources in the shape of honey, fruit, various leguminous herbs, and other jungle produce. They hunt game with bow and arrow, and are remarkably adept with their primitive axes,* which they will at times use as throwing weapons when their quarry is approached in the densely wooded forests. They snare game with cunning and infinite native patience. They are good trackers, but, in this, they are less systematic than the Ndorobo hunter of Kenya Colony, and in their pursuit of game they frequently appear to disregard the subtleties of the prevailing wind. This disregard, which the experienced Ndorobo hunter would look upon as a grave error, may, however, to a certain extent, be explained in the case of the pursuit of the Asiatic elephant on the ground of the difference in habits and disposition between the latter and his African congener. Unlike the African species, the wild elephant of these jungles is rarely far distant from the habitations of mankind, and the presence of scattered hamlets, comprising a few thatched huts in some forest clear-

* These axes have a light, narrow iron or steel blade of somewhat primitive manufacture and are provided with a thin shaft from 2 feet to 30 inches in length. They resemble in some ways the tomahawk and are either wielded or thrown. In the annual organized game drives in the State of Mayurbhanj it not infrequently happens that the beaters bring down a stag (*sambar*) with their light hatchets, although this is strictly against the rules of the State. The forest officer informed me that they have been known to cripple a *gayal* (bison) by a concerted attack at close quarters with these throwing weapons as the animal was breaking its way back through the line of beaters.

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ing, occupied by small communities of Khariahs, is naturally a cause of a certain amount of familiarity on the part of the elephant with the scent of man inhabiting these regions. The scent of the white hunter is, however, a different matter, and will, at all times, create a disturbance in the mind of a jungle elephant. In the case of herds they will invariably endeavour to move off towards the remoter recesses of the forest. When aware of a hot pursuit, the leader of a herd may sometimes halt suddenly, wheel round sharply, and face the pursuer with cocked ears in an attitude of intimidation, presumably with the object of deterring the intruder by a bold display, and thereby giving time to the other members to retire. To the uninitiated sportsman, this sudden exposure of a much more impressive aspect of the towering animal might perhaps appear as a token of the aggressive temperament of the particular beast, and convey an idea of an imminent attack. Far from this being the case, in several instances of this nature, I have arrived at the conclusion that this display of a bold front has cost the peaceful monster some effort to overcome its native timidity, in its anxiety to protect its charge. The intimidation may at times even be carried further by a feint attack, but, unless the situation is aggravated, the animal is likely to be content with a harmless demonstration of its resentment.

For the reasons explained the Khariahs at my disposal thought little of bringing their master up to the game in a way that the careful Ndorobo huntsman would look upon as a gross mistake on the part of a novice, *i.e.*, by omitting to gauge the wind. Far from attributing the blame to their probable ignorance of the difference in scent between the native and the European, I must confess that the fault was entirely on my side

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through my impetuosity and want of care. This neglect was brought home the moment we became aware of the presence of our quarry by a rustle and swishing noise of branches and foliage, caused unmistakably by the passage of a bulky object moving through the forest growth. The sight of these jungle folk is surprising; one of the trackers spotted the elephant and pointed it out to me—a patch of grey-black hue, hardly discernible among the shaded foliage. The swishing noise was apparently caused by a change in the animal's attitude, and was followed by a dead stillness, a sign that the creature had suddenly stopped feeding. Motioning to the Khariahs to keep clear of possible danger, if this were the rogue, I crept stealthily up the hillside towards the object of my curiosity, and had approached it to within some thirty yards when there was a renewed rustle, but this time it was far more energetic. The sudden appearance of the disturbed beast, when it backed a pace or two and emerged from a tangle of brushwood and creepers, was decidedly grand. It stood alert, in a challenging attitude, with its head held high: the tusks, though not large, were pointing forward in a somewhat aggressive manner. The ears were partly cocked, the trunk remained pendent, and the beast stood as motionless as a statue. It seemed prepared for action, and had one of its forelegs planted boldly in advance of the other. Slowly the ears spread out to their full extent, and a more excellent subject would be hard to find for the photographer of wild life, with the exception of the African elephant in a similar attitude.

Wriggling my way to an adjacent bit of undergrowth I obtained a better view of my object. I longed to obtain a record of this sight, yet wished I had not parted with my rifle,

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which had been left against a tree a little below the spot on which I now stood. Whether I retreated or risked an exposure, the chances of immediately attracting its attention were likely to be the same, and I decided to choose the latter course, trusting to gain a temporary advantage by springing a surprise on the animal in the way of a sudden appearance of my camera above the undergrowth. After a moment's nervous focussing on a patch of the animal's body, which I could discern on the screen between a few obstructing twigs, I raised the camera above my head, holding it with the lens directed towards my object, and made the exposure more or less at random.

Far from being nonplussed at the appearance of the box shape popping from out of the undergrowth, a trick which was often successful in my former experiences, the beast commenced, without the slightest indication of its intention, to strut rapidly towards me, in perfect silence, with its head held high and the lower part of the trunk curled inward apparently so as to clear the undergrowth beneath it. Dashing as fast as my feet would carry me to the spot where I had left my rifle, with the cumbersome camera slung round my neck and its focussing hood left open in the hurry, I became aware that my assailant had stopped suddenly close to the spot from which I had made my exposure. Its head was concealed among some foliage, and for this reason it had apparently lost sight of its intended victim. It now stood in an alert attitude similar to that which it had displayed on first sight, endeavouring to catch the least suspicious sound. A clump of undergrowth was a welcome obstruction between myself and my assailant. Its massive frame showed above the thicket; the outline of its head

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and one of its tusks were partly discernible, curiously well blended with the foliage.

Being but a few yards from the jungle path, I hoped to reach it stealthily and make good my escape, but this was not to be without another energetic effort on the part of my pugnacious pursuer.

On my treading on a profusion of dry leaves with which my passage towards the path was littered, the aggravated animal barged with unreasonable frenzy through the intervening thicket and emerged on my side of it, trunk coiled and head thrust eagerly forward. Finding that its intended victim had escaped, it pulled up suddenly and began viciously to trample the ground below its massive form. This action, under different circumstances, would have appeared decidedly comical, as being in a way similar to the demeanour of a passionate and stubborn child. These outward signs of its frenzy proved to be greatly in my favour, for the trampling noise effectively drowned the crackle of dead leaves which I caused in moving towards the path. Although bruised and tired, with a torn shirt and scratches over face and arm, I was contented at having had a shot with my camera. A short way down the path I was met by the Khariahs, who had heard the rustle and bustle without having been able to witness, from their high point of vantage among the trees, all that had happened in the few anxious minutes. That this kind of sport suited the nature of these Khariahs was quite apparent from the gleeful smiles that wreathed their swarthy faces, and the zeal with which they subsequently performed their tireless tracking was ample reward to me. The little fellows had by now realized the importance of observing the direction of the wind, when ap-

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proaching in the company of a white man a vicious individual among these otherwise timid giants of the forest.

Determined to make the most of this opportunity, I decided to make further acquaintance with my solitary friend in a more suitable environment, where an exposure might be risked with a better chance of success. Being aware of the presence of a rivulet which gurgled pleasantly at the foot of the wooded hillside, I surmised that it would be only a matter of a few hours towards sundown before our ill-tempered friend would be disposed to quench its thirst. A curious intermittent rumbling noise, hardly audible at the distance, gave me the impression that the fury of the animal had not quite abated.

Leaving a few Khariahs to watch his movements from their posts of observation, perched on the fork of a tree, I retired to a cooler part of the forest, and decided to while the time away with a welcome siesta in a shady recess. From the position of the sun it might have been three o'clock when one of the trackers came to me and pointed in the direction of the nullah below, from which I gathered that my fierce acquaintance had made its way towards the brook earlier than I had expected. No time was lost in reaching the approach to the water, and I found to my satisfaction that the forest ended abruptly half-way down the slope, giving place to a clearing where the grass was dry and some three feet high; this we quickly traversed and reached the tall reeds near the rivulet, where the ground was moist and sodden, offering excellent means of concealment. Making our way cautiously across the rush and behind our quarry, we reached the edge of the opposite bank by fording the brook, and had the wind splendidly in our favour. We obtained a glimpse of the animal,

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stern on, as it brushed leisurely among the reeds: I signalled to the tracker to take care of himself, as we had approached to within some twenty paces of the unsuspecting beast. After waiting with impatience for an opportunity to get a good view of the animal, I was presently relieved to find that the old hermit was moving obliquely towards my side of the brook. In my mind I had carefully mapped out a line of retreat and had left my rifle on what looked like a prominent spot. With mixed feelings of joy and apprehension, I watched the brute leisurely approach the bank, step slowly from the reed bed on to the grass-covered ground, and move away from me. I was fumbling with my camera when, of a sudden, the animal became conscious of my presence, backed a step or two, and swung its body round to such an extent that it was facing me obliquely. The truculence expressed in the poise of its head conveyed none of the mildness which is otherwise so common with the normal Indian elephant.

The shutter of the camera had barely been released, and the first step taken towards my escape, when the animal coiled its trunk and at the same moment thrust its head forward; it lost no time in getting into stride, attacked in silence, and overshot the spot on which I had been standing.

I have in my recollection a glimpse of a monstrous frontal, as it rapidly foreshortened. Grasping my rifle and dashing across the brook, with what agility I could muster, I reached the opposite bank. Glancing back over my shoulder, I realised that my assailant had rushed past the spot from which the exposure had been made and had pulled up with surprising celerity for an animal of such large proportions. The brute wheeled round and stood sullen and seemingly perplexed, gazing at the

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retreating figure of its elusive victim. Meanwhile, I made my way with less haste across the grass until I reached the edge of the *sal* forest. Our friend had evidently found his exertions sufficient for his temperament for he was now contented to watch for the intruder from his own side of the brook: he displayed none of the tokens of rage he had shown on the previous meeting a few hours earlier, and finally he moved round with deliberation and brushed his way up the narrow valley.

Satisfied with the day's labour, I was joined by my Khariahs, who were beaming with pleasure, having, as I gathered, witnessed the proceedings from various points of vantage; one or two of them, apparently, had crept after me a short distance behind, to enjoy the novel sport at a closer range. The natural hunting instinct of the little chaps was not to be denied.

This incident goes to establish the fact that there are, among these otherwise timid denizens of the Indian forests, individual animals that are by nature vicious and aggressive: some of these so-called rogues may deliberately seek the destruction of mankind without the least provocation. Such instances are, however, extremely rare, and these occasional specimens may be likened to a raging madman among human beings. They are presumably made more savage by their exclusion from the herd to which they originally belonged and by being prevented from associating and mating with the others.

An instance showing with what determination these solitary offenders are prevented from associating with herds was recorded in an Indian newspaper, "The Statesman," in the issue of 21st January, 1923, in which there appeared a pair of

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interesting photographs exhibiting the result of a fight to a finish between the master bull of a herd and a single-tusked rogue elephant.

The description which accompanied these illustrations was as follows:—

“Ordeal of battle in the jungle. During Xmas week (1922) a single-tusked ‘rogue’ elephant strayed in to the scene of the ‘Kheddah’ operations in Angul (Orissa), and was slain by the chief tusker of the herd in a fight to the finish which lasted over an hour and a half, and extended through a mile of jungle. The first photograph shows the ‘rogue’ lying dead in a deep ‘nullah’ into which he fell while being pursued by his victor, who gored him to death in the head as he tried to extricate himself from his disadvantageous position. The second photograph conveys a fair idea of the number and extent of the wounds on his head. The ‘rogue’s’ single tusk measured 5 feet 8 inches in length and had a maximum girth of 16 inches.”

The particular photographs depicted the dead rogue as it subsided on its knees in the treacherous mud of the nullah from which it vainly tried to extricate itself. Six deep tusk holes are clearly visible on the nape, besides which several wounds, of a severe nature, are shown on the side of the animal’s head.

From the evidence of mutilated bodies of wayfarers, attacked by frenzied rogue elephants as they were returning from a distant market, it is clear that there are, from time to time, beasts that will attack man from sheer ferocity and pleasure in destruction. In certain cases the bodies have not only shown that the victims were trampled out of recognition, but

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have also given proof of the raging brute having plucked off the head and limbs.

Sir Samuel Baker found, in the pursuit of his favourite pastime of hunting the elephant, that this imposing quarry, when fairly met, offers the most thrilling experiences to the sportsman in search of exhilarating adventures. The photographing of these huge denizens of the forest adds considerably to the exciting nature of the chase, in fact, to such an extent, that the rifle becomes, after a time, a mere tool of destruction, and is only used in case of absolute necessity.

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